

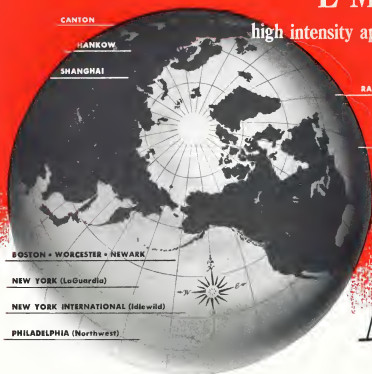
# AVIATION WEEK

A MCGRAW-HILL PUBLICATION

DEC. 20, 1948

## L-M-Bartow

high intensity approach and runway lights



CANTON

HANKOW

SHANGHAI

RALEIGH-DURHAM • KNOXVILLE • INDIANAPOLIS

CHICAGO • MILWAUKEE • MINNEAPOLIS-ST. PAUL

ST. LOUIS • SALT LAKE CITY • PHOENIX

PANAMA CITY • CARACAS

DUBLIN • SHANNON

BRUSSELS • PARIS (Orly Field)

BOSTON • WORCESTER • NEWARK

NEW YORK (LaGuardia)

NEW YORK INTERNATIONAL (Idle wild)

PHILADELPHIA (Northwest)

L-M-Bartow pioneered high intensity lighting, and is today's leader both in quality and number of installations. The list shows some recent users of L-M-Bartow high intensity systems. Only the fully controllable beam permits the very high controlled intensities, up to 180,000 beam candlepower. This gives maximum penetration, *without glare*, reaching out further to "bring 'em in alive" when every foot of distance counts. For information on this and other engineered lighting for all sizes of airports wire or write Airport Lighting Division, Line Material Co., East Stroudsburg, Pennsylvania.

# All over the world!



## LINE MATERIAL Airport Light

Illustrated is the new Bendix-Pacific Model TMT-24 Telemeter (in 7-7 size).

# COMPLETE REMOTE INSTRUMENTATION

**Bendix-Pacific**

## Telemetry System

**E**ngineered for precise remote instrumentation on guided missiles, aircraft and for industrial uses, Bendix-Pacific Telemetry Systems incorporate time-tested sub-miniature components which offer many special advantages.

Bendix-Pacific Systems have demonstrated their ability to withstand extreme vibration and shock and still accurately measure velocity, distance, altitude, pressure, RPM, gyro drift, position, temperature, strain and various motions and movements. In addition to accuracy, these systems can be utilized in many industrial applications where conventional means of measurement are impractical because of inaccessibility.

Due to the extremely small size of the Bendix-Pacific units, a typical six channel system complete with power supply and transmitter can be packaged in 190 cubic inches of space and weighs less than 11.5 lbs. They can be used on 90-50 mc or 230-220 mc.

Bendix-Pacific provides complete design and manufacturing facilities to assist in application problems. Information available to qualified companies.

BENDIX-PACIFIC REMOTE INSTRUMENTATION ANALOGUES		
FUNCTION	PRECISE SIZE	WEIGHT
Accelerometer (g's) 1000	1 1/2" x 1 1/2" x 1 1/2" (1.5" x 1.5" x 1.5")	1.5 lbs.
Pressure (psi) 1000	1 1/2" x 1 1/2" x 1 1/2" (1.5" x 1.5" x 1.5")	1.5 lbs.
Temperature (°F) 1000	1 1/2" x 1 1/2" x 1 1/2" (1.5" x 1.5" x 1.5")	1.5 lbs.
Position (inches) 1000	1 1/2" x 1 1/2" x 1 1/2" (1.5" x 1.5" x 1.5")	1.5 lbs.
Velocity (inches/sec) 1000	1 1/2" x 1 1/2" x 1 1/2" (1.5" x 1.5" x 1.5")	1.5 lbs.
Altitude (feet) 1000	1 1/2" x 1 1/2" x 1 1/2" (1.5" x 1.5" x 1.5")	1.5 lbs.
Pressure (psi) 1000	1 1/2" x 1 1/2" x 1 1/2" (1.5" x 1.5" x 1.5")	1.5 lbs.
Temperature (°F) 1000	1 1/2" x 1 1/2" x 1 1/2" (1.5" x 1.5" x 1.5")	1.5 lbs.
Position (inches) 1000	1 1/2" x 1 1/2" x 1 1/2" (1.5" x 1.5" x 1.5")	1.5 lbs.
Velocity (inches/sec) 1000	1 1/2" x 1 1/2" x 1 1/2" (1.5" x 1.5" x 1.5")	1.5 lbs.
Altitude (feet) 1000	1 1/2" x 1 1/2" x 1 1/2" (1.5" x 1.5" x 1.5")	1.5 lbs.



**Pacific Division**  
Bendix Aviation Corporation

TO MEASURE... TO INDICATE... TO WARN... AT A DISTANCE

Bendix Sales Office: 425 Park Ave., N. Y. 17 • Distributor: Bendix Sales Corp., Bendix Corp. • Sales Agents: Bendix International, 1111 Ave. N. Y. 11



## How fires ALOFT are studied on the GROUND!

We've started—and stopped—more than 600 engine fires at the Kidde proving grounds—and we've done it under conditions that simulate actual flight.

We've set the fires in the rear engine of this tandem setup of B-26 power plants—while the spinning propeller blades of the front engine send back through the rear nacelle a roaring wind that reproduces the dynamics of high-speed flying. We've blasted out the fires with every known extinguishing agent, Carbon dioxide (CO<sub>2</sub>), methyl bromide, bromochloro-

bromofluore (CB), dichlorine (DC), the many Freons—we've checked the fire-killing time of them all with split-second precision.

Through these hundreds of tests—through the study of more than 1100 additional fires in mock-ups—Walter Kidde & Company, Inc., has amassed a wealth of fire-fighting information unattainable by any other private organization. We are always ready to place this information at the disposal of government agencies, plane manufacturers and transport companies.



The word "Kidde" and the Kidde logo are trademarks of Walter Kidde & Company, Inc.

# Kidde

Walter Kidde & Company, Inc.

1918 Main St., Belleville 9, N. J.

AVIATION WEEK, December 30, 1960





Boyd George Bridge, just west of Canton City, Colorado, is one of dozens built in Memphis. Air Lines DC-3s Memphis's "Buses Skipped at the Wheel" is an early Boeing Airline which serves extreme winds conditions. All flight times are small, air segments and air freight. Memphis Air Lines has more in operation than Texas Aircraft Engine, Gil exclusively.

## How "feeders" can get major Airline Maintenance Economies

Use Texaco Aviation Products and Lubrication Engineering Service. They increase efficiency and reduce costs.



You can gain a lot of practical know-how about aviation maintenance from Texaco Lubrication Engineering Service help and counsel on best buyouts for maintenance shops... here lubrication practices... efficient methods of storing and handling lubricants and fuels... proper servicing methods... and much else besides.

Couple this with Texaco's lubrication plan and you've got the perfect set-up for maintenance economies. With only seven Texaco products you can handle practically every engine and aircraft lubrication job.

Find out in detail how Texaco can help you increase your operating efficiency and reduce your maintenance costs. Just call the nearest of the more than 2500 Texaco Wholesale Distributing Places in the 48 States, or write The Texaco Company, Aviation Division, 135 East 42nd Street, New York 17, N. Y.



**TEXACO Lubricants and Fuels**  
FOR THE AVIATION INDUSTRY

Texaco... TEXACO STAR BRANDS products ACTION SELL every Wednesday night AUTOMOBILE OILS... products every Saturday afternoon.

## NEWS SIDELIGHTS

### Procurement Shifts

More shifts in fiscal 1949 Air Force procurement funds have been made as predicted in *Aviation Week*, Oct. 15. Latest are his bill on letters of intent for jet fighters to the tune of about \$33,000,000.

This money, combined with the \$80,000,000 approved in cancellation of the Curtis-Wright F-87 contract, puts the Air Force about \$110,000,000 to spend in jet types.

Included in the new allotments that are now in Forester's office are a sizeable purchase of the Lockheed X-56, jet trainers and jet fighters of a more advanced design than those called for in the cancelled contracts.

### Air Force Strategy

Recent plans by Staff Officer's Inquiry Committee and American Airlines' C. R. Smith suggest support of the U. S. Air Force and Naval Aviation from a single air force as the operating goal in a new phase to take Naval Aviation from under the wing of the Navy. Smith is president of the Air Force Arm and Doctrine Committee of the House of Representatives.

Air Force Arm voted for merger of the two air forces at its convention last September and has apparently been pushed to speed up this campaign by that its leaders are not bound by the Forester jet rate which allows military personnel to discuss air service issues. However, AFA has Air Force officials now on active duty as its membership rolls. C. V. Whitney, assistant secretary of the Air Force is also an AFA director.

In the coming Capital Hill battle on the fiscal 1949 budget, Air Force strategy will be to let AFA spokesmen deliver their public faith and rely on air power advocates in the House and Senate to make the necessary budget shifts. Air Force leaders will remain in the background, at least publicly, to avoid the charge of openly backing administration policy.

### Hoober on CAB

The Commission on Reorganization of the Executive Branch offered basic list work to airline representatives who are fearful that Civil Aeronautics Board might be merged with Interstate Commerce Commission in a reorganization of Washington's transportation agencies. The Commission, headed by former

### Forester's Position

Don't be fooled by the theory of Washington press about an imminent Defense Secretary Forester now stands with President Truman.

Most of these stories were carefully placed among Forester's favorite correspondents—the regular attendees at the Forester estimate budget reports. Actually, Forester put a cool complexion from General H. H. Wood, and Washington observers still expect him to disappear from the defense post team after the fiscal 1949 military budget has been developed through Congress.

Forester has been seen as an enthusiastic supporter of air power and has had many a sharp brush with the independent U. S. Air Force during its fledgling years.

President Herbert Hoover, officially reported that "no change would be proposed in the status of the regulatory agencies, such as the Securities and Exchange Commission, the Interstate Commerce Commission, and the like which are responsive to Congress and are not part of the executive establishment."

Hoover Commission spokesmen and that this referred to CAB. However, the Commission's decision is still subject to review and modification. There is some possibility that the Commission will recommend consolidation between CAB and SEC activities, in the large area in which the actions of one agency affect the field under regulation by the other agency.

### Just in Case

A little-known contract between Dr. Alexander Watson, secretary of the Smithsonian Institution and the executor of the Orville Wright estate, was signed before the executor's consent to deposit of the plane in the National Museum in the Institution's custody.

The contract prescribes the label displayed with the plane, and specifies that the plane shall remain in its present place except temporarily for maintenance or protection, unless it is transferred to a special place of honor in another national aviation museum as the responsibility of the national capital (presumably the new National Air Mus-

ium which is now in planning stage).

The contract provides that neither the Smithsonian Institution or any agency administered by it or its successors shall include or permit to be displayed a statement or label in connection with... any airplane model or design of earlier date than the Wright airplane of 1903 claiming in effect that such aircraft was capable of carrying a man under its own power in controlled flight. In event of donation from this requirement, and before to record the donation within 12 months after work is done, the title of the plane must be sent from the United States to the Wright estate.

### Russell For Tydings?

There is some speculation on Capitol Hill that Democratic Sen. Richard Russell (Ga.) will fill her in the chairmanship of the Senate Armed Services Committee, scheduled to take up legislation authorizing the 70-Group Air Force program. Democratic Sen. Millard Tydings (Md.) is first in line for the post.

Tydings is reported to be seeking a position on the Senate Foreign Relations Committee. As a peer for this overall assignment, Tydings would have to give up his membership on the Senate Appropriations Committee, and might have to surrender the Armed Services chairmanship.

Russell made under Tydings on Armed Services and is also a high ranking member of the Appropriations Committee. Russell, 34th Air Group, Air Force, Rep. Cliff Vane, scheduled to become chairman of the House Appropriations Committee, is a strong proponent of the 70-Group USAF.

### Douglass Steps On

Charles Frank P. Douglas left the National Museum as a member of the National Museum Board for another three-year term beginning Feb. 1. Douglas, a member since 1944 of NMB, had planned to retire and return to Oklahoma where he now lives, except for 31 days in New York, N. Y.

After visiting the White House to discuss Douglas and President Truman had asked him to reconsider. "At the President's request," Douglas told reporters, "I agreed to stay on until early 1951." This would enable Mr. Truman's intention to appoint Douglas to another three-year term. The chairman's duties usually among the three NMB members.





## RPM and RHYTHM under the pilot's finger-tip control

- CURTISS AUTOMATIC DISCREMINATION makes propeller RPM control and engine ROL DTE a simple, one lever, finger-tip operation for pilots of modern multi-engine aircraft.
- A single lever propeller rate control—located in the cockpit—establishes the constant speed setting for each flight condition.
- ... and at the same time maintains accurate tachometer engine—engine RPM—of all engines down to an automatic synchronizer master unit.
- As a result, CURTISS AUTOMATIC RPM REGULATION...  
... characterizes every, strong, efficient engine "beat."

 **CURTISS** ELECTRIC PROPELLERS

AVIATION WEEK, December 29, 1948

## NEWS DIGEST

### DOMESTIC

Philip S. Hopkins, vice president of Bell Aircraft, Inc., was given Bronze Award by National Aeronautics Assn. for contributions to aviation education in 1948. He is president of the Engineering, N. Y. board of education.

Arthur M. Hill stepped in chairman of the National Security Resources Board. Temporary replacement is John R. Shedd.

New air terminal in New York City will be built by a municipal agency near First Ave. and 17th St. to replace present overcrowded building at 42nd St. and Park Ave. Structure, to be ready in a year, will be about 100 stories, with ground and mezzanine floors leased to airlines.

William B. (Bert) Hall, former first and a founder of the *Lafayette Escadrille* in World War I, died of heart disease in Phoenix, Ohio. He was 62.

Airlines Was Training Institute devoted 50,000 to Air Force Air Security. AWTI President S. J. Schuman explained it was balance of government's approach, except for small sum to cover change of records and possible tax liability. AWTI was formed during the war to collect and distribute information from elsewhere for where pilots on war transport duty.

### FINANCIAL

Bell Aircraft Corp. declared dividend of 50¢ a share payable Dec. 25 to holders of record Dec. 21; payment to be made hereafter.

North American Aviation, Inc. declared dividend of 90 cents payable Dec. 27 to holders of record Dec. 17. Stock amount was paid Sept. 29.

Sperry Corp. declared \$1 semi-annual dividend payable Dec. 25 to holders of record Dec. 17.

General Aircraft Co. reports profit of \$177,906 for year ended Sept. 30 on sales of \$14,293,321, nearly monthly from non-aviation production.

Rockwell Aircraft Corp. declared dividend of 50¢ a share payable Dec. 25 to holders of record Dec. 17. The company also paid 50¢ a share of outstanding common, and quarterly cash dividend of 25¢ a share (payable also on its dividend stock), both payable Jan. 30 to holders of record Dec. 21. For fiscal year ending Sept. 30, profit was \$2,217,625. Oct. 1 backlog was \$17,600,000.

### FOREIGN

French Air Force has taken five British de Havilland Vampire jet service trails, with the option possibility that there will be further deliveries from Britain of Vampire models that now are surplus.

## INDUSTRY OBSERVER

► Navy has finally selected 16 more aircraft to be purchased with their fiscal 1949 procurement funds. Avoiding approval is a contract for 28 North American A-1J reconnaissance jet and reconnaissance engine attack planes for carrier use, and two Lockheed Constellation transports. The latter will be equipped with special radio equipment and be used for packet and anti-submarine duties.

► Lockheed is working on a new two-engine freight plane designed for one-stop transcontinental service. The new design, known as the L-165, is being pushed for both military and commercial markets. The L-165 was developed from the same design as the Navy P-3V patrol bomber. The cargo liner will use the same wing and empennage as the P-3V.

A new model at the Stearman Star jets fighter is also in the mill. It will be three feet longer than the F-80C at approximately the same height as the two-story frame stream (TF-80C) now being built for both the Air Force and Navy.

► Secretary of Air Force Swanson reveals that the cost of propellers for one F-86 bomber is \$164,000, which is \$43,000 more than the total first annual budget for the Air Force in 1951.

► McDonnell has secured its two-engine helicopter project (RH-1) after demonstrating the engine vibration that once caused shoving of the engine. Shock-mounted rotor hubs eliminated most of the vibration and McDonnell now expects good performance from the model.

► First electronic pilot jet helicopter has been developed by Coast Guard Craft. Frank Fitchman. Big problems now developing controls for flying sideways and backwards.

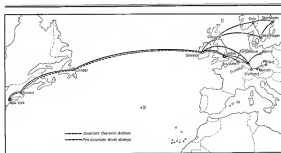
► French military aviation remains new in the country will concentrate on Republic and Cessna. Big French need a jet for fighters and they are particularly interested in Cessna's experience in building its engine for the United States jet engine. France plans a similar deal with the British.

► Czechoslovakia has purchased two Russian IL-12 transports. The IL-12 is a Russian-developed, two-engine, multi-engine, multi-engine transport. Russian domestic, no longer now operating a fleet of about 200 IL-12 transports. Negotiations for Czech purchase of four giant IL-46, 70-passenger transports, are in progress. They will be used on the Czech's route to India.

► Air Force is installing a moving target indicator on its traffic control radar at Tusphield Anderson, key spot on the Berlin route. Crew from Lockheed Instruments Laboratory, Missoula, N. Y., is handling the installation. The moving target indicator eliminates all ground clutter on the radar scope and controls only moving targets thus giving a clearer picture of air traffic within radar range.

► Pan American Airways plans to have five Stratocruisers by the end of January. They will be used on the San Francisco-Honolulu route; one on the Atlantic and one extended for training. In face of the Post of New York Authority's ban on planes of more than 185,000 lbs. gross weight at LaGuardia, PAA is quickly gathering legends about Boeing as plans of Stratocruiser landings and takeoffs on Seattle Airport, which if plans to convert to the Port Authority is an effort to obtain permission to operate Stratocruiser from LaGuardia.

► Royal Canadian Air Force procurement funds, include an order for Royal Canadian Air Force for 20 Canadian-built DC-4M North Star transports from Canadian Ltd., Montreal, at cost of \$14,800,000, including and maintaining 209 RCAF service planes at estimated cost of \$10,577,000, expenditure of over \$6,800,000 on jet engine research and experimental construction at A. V. Roe Canada Ltd., Toronto, purchase of military aircraft from United States and Coast Guard at cost of \$7,366,830.



AT STAKE, principally, in Pan American's proposed purchase of American Overseas Airlines are three main trans-Atlantic routes.

of the two companies. AOA also has a link to Southwestern in Ireland. The purchasing is the heavily funded New York London

airport makes a virtual study in anger. Route certification for both routes extends outward beyond the point where

## PAA-AOA Deal Now Up to Government

Pan American to buy Atlantic rival with a stock transfer involving no cash payment.

By William Kruger

In the incident, most financially complex undertaking in recent airline history, Pan American Airlines has moved to strengthen its position as the North Atlantic's best served competitor and oldest U. S. mail, American Overseas Airlines.

American Overseas has agreed to sell all its assets in PAA in exchange for stock in PAA, but the sale has a long road to travel before completion. Auditors must agree on the value of the two companies as a basis for the stock transfer. The Civil Aeronautics Board must approve the sale and the President may have to pass on some aspects of it. Stockholders of the two companies must approve. The purchase of American Overseas Lines, now a 20 percent minority stockholder in AOA, must be clarified. And many other conditions must be met.

► **CAB Questions**—No one knows now what the Board's attitude will be. Top CAB officials were sounded out in December on the management in PAA and AOA executives had been told the Board would not give an opinion until the case came before it. Publication of reports, together with the CAB approval, was filed last week. AOA believed the deal, as it stands, is beyond dispute.

At all conditions of the sale have been fulfilled in its assets, AOA and PAA have agreed the deal. But the fact that both companies have the government will have approved. At no time's what will happen, as yet as the agreement between the two carriers.

Pan American Airlines, like the operating companies will acquire all the stock of Pan American Airlines Corp. In holding company's a total of 38 million shares at par value of \$2.50, of which 6,145,000 are owned

American Overseas Airlines will receive PAA stock equivalent to the value of its 1,740,625 outstanding shares at an average price of \$10.75 a share, or its net book value as of Dec. 31, 1948, which was a higher. Value of PAA stock also would be computed on basis of book value as of Dec. 31.

► **Open Road**—This will be left open to allow for any new air developments before Apr. 30, 1949 covering years 1949, 1947 and 1948. AOA has just received \$174,517 additional mail pay for 1945. No later than May 1, the airlines will report on the book value of the two companies.

Pan American Airlines will have to obtain loans of \$10 million in addition to its present \$40 million line of credit, of which it has drawn \$10 million. AOA is to try to persuade the banks to extend part of that sum. This has to be a decision, possibly to be taken to take care of AOA equipment alterations that might be due to the deal in pending. The two companies must each hold stockholders' meetings within 45 days after government approval. PAA, Inc., and

AOA is to accept as input PAA's offer. An agreement from American Export to AOA's just as the transaction is likely to come at or just prior to the stockholders' meeting.

Among the stockholders appears, the PAA stock would be distributed to AOA stockholders. There AOA would be divided and PAA could not use the word "Division" in its title or operations in any way.

► **Voting Trust**—American Airlines, as the largest stockholder in AOA, would wind up a substantial stockholder in Pan American. So the sales agreement provides for a voting trust to hold that stock. One trustee would be selected by American, one by PAA and the third, a mutual agreement. The trust would have a life of seven years and could be extended another three years. It is AOA's intention to dispose of its Pan Am stock, either on the market, under controlled conditions or by distribution to American stockholders.

Pan American would acquire from AOA, in addition to certificates, various franchises and other tangibles, such as 149 Constellation for DC-6s and the fleet Boeing Stratoliner AOA has on order. The agreement permits AOA to sell one DC-4 for each Stratoliner delivered as the value.

► **Financially**, it is considered that the possibility of AOA's September deliveries (first scheduled late in January or early in February), was one of the factors in AOA's decision to sell to Pan Am. The eight planes will cost about \$54 million. AOA had paid about \$4 million on them. There is supposed to be a minimum of one credit to cover the balance, but it does not show on the balance sheet of AOA and PAA, suggesting that the transaction that PAA obtain loans of \$10 million was solely to cover cost of AOA's Stratoliner. That loan is so important that the agreement will be cancelled if PAA can't raise the money.

► **South Florida**—This once more reveals the real reason for the sale made to AOA President C. R. Smith. "The real reason for the sale was to get away from the U. S. and Europe. The fact that the favorable volume of business does not justify the maintenance of this competing U. S. carrier on the North Atlantic route, the expense of which would be required to sustain their charges and the difficulty of securing the additional capital which will be required for the future."

Smith after that sale was, that was once finally secured the basic route to PAA President Louis T. Tupper that U. S. carriers should not compete with themselves when they also have to compete with foreign airlines.

In late in November, the sales agreement was announced Dec. 13 AOA and was gaining ground on its 9134 route



C. R. Smith



Louis T. Tupper

into the North Atlantic. It flew 84 percent south passengers in November, 1948, then in November, 1947. In October, its load factor was 71.6.

Through November, AOA carried 22 percent of the northeast traffic, against PAA's 38 percent. TWA, the other U. S. trans-Atlantic carrier, then both with about 25 percent.

► **Financially**, AOA also was doing well. Through September it earned \$549,012 this year on total operating income of \$54,547,314. Its third quarter earnings were \$1,690,514.

► **Admiral**—PAA's traffic and profits have been based on service to South America in connection with U. S. reception of Germany and the Berlin airlift. Political changes in that situation would limit AOA's role.

► **Atlantic**—The long-term growth of Atlantic traffic has been promising. According to Tupper, foreign lines have opened their proportion of traffic 10 percent in the last year. AOA, with its extensive certificate holdings, in July, 1947, was faced with the alternative of extensive expansion, or withdrawal.

Smith's concern, American Airlines was established to operate the trans-Atlantic traffic but was not a U. S. carrier. With TWA, American wanted the Airlines Committee for U. S. Air Policy which was formed by 16 domestic airlines in 1941 successfully to persuade the government to create trans-Atlantic traffic for the PAA.

► **After AOA**—When CAB ordered American Export Lines to sell its stock to PAA, it was in control of American Export Air Lines and U. S. carriers then owned PAA on the North Atlantic, it was natural that American Export Airlines (which became AOA) Smith intended from the Air Transport Conference with the intention of building AOA into a worldwide network of AOA. John F. Slater, who had helped Slater build PAA, had and was the ownership

company a representative in AOA, because based elsewhere when Slater took over AOA's presidency.

Slater resigned from AOA May 19, but his actions were not announced until after news of the impending sale became public.

Tupper was the natural adversary of Slater and Slater. With a son going to college, he had his company's planes. Slater and thought in terms of world trade. His remarkable belief that U. S. carriers should not compete with each other while foreign lines are self with the best of the trade is exemplified in the Congressional struggle over the "choice instrument," or company company concept of operation whereby one fourth-owned airline would be granted permission by the government to operate between.

Slater after five companies were considered to be the Atlantic, instead of the two that Slater had believed necessary. Tupper held to his belief and at the time tried to buy TWA. American Airlines was a belief that the AOA negotiations were managed by Tupper. The discussions were held between Slater and Tupper, and to secretly that meet his significant criticism of AOA did not know, they were in progress.

► **Representations**—The AOA deal was made representations over after CAB action. The agreement submitted Pan Am to the stock of its new airline company would the sale is consummated. There is reason to believe, however, that PAA feels that this is a first step in having the single-company U. S. operation over the North Atlantic that it has been unable to gain through legislation as CAB alone.

► **For AOA** part Slater on each side of both air freight and air coach service will be free to concentrate on American's domestic market at a time when both coach and freight service are beginning to make headway.



## X-1 Project Wins Collier Trophy

Award goes to scientist who studied compressibility, builder of plane, and pilot who passed sonic speed.

The 1997 Collier Trophy has gone to three men recognizing the team of the women's effort in achieving piloted as passenger flights for the first time in history. The winners Lawrence D. Bell President, Bell Aerosol Corp., bridge-

of the 33 stomach aspirates. Capt. Claudio E. Yeager, USAF, pilot of the X-1 on its first supersonic flight, and John Stuck, NASA, supersonic research scientist, who lead the National Foundation for the Design of the X-1.

By thus embracing the three principal activities responsible for the historic achievement, the Caltech-Triple words manuscript has recognized the success for X-1 progress in "The greatest achievement in aviation at Ames, the value of which has been demonstrated by actual use during the preceding years."

The first piloted supersonic flight was made by Capt. Yeager on Oct. 14, 1947 at Muroc Air Force Base, Calif., and disclosed in an exhaustive *American West* story on Dec. 22, 1947.

Stark's work joins Stark's conviction, two to the supersonic flight program actually had its beginning in 1937 when he was assigned to research on the problem. Stark designed and built the first high speed wind tunnel at the NACA Langley laboratory in 1939 and had developed basic research data on compressibility phenomena and the design of high-speed airfoil sections as early as 1932. By 1935 the principles of supersonic aerodynamics were thoroughly understood and in 1942 it became apparent that all the required knowledge was available for the design of a supersonic rocket motor.

Stack and Air Force officers began discussions of the problem in the fall of 1943 and in March, 1944 a definite program of piloted sonic and supersonic research had been formulated. In December, 1944 Bell won the program.

to provide the detailed design and construction of the X-1. The last segment was completed at Buffalo late in 1945 and glider tests were carried out in February, 1946, while construction of the rocket power plant was delayed.

► **X-1 Progress**—The engine was finally installed and the first powered flight was made at Muroc Air Force Base, Calif., Dec. 9, 1946. Demonstration flights continued through the spring of 1947 and the airplane was accepted by the Air Force in August. Capt. Yeager took over flight training of the airplane and retained supersonic speed for the first time Oct. 14. He has since flown at supersonic speeds on numerous occasions.

It was the combination of scientific, economical strategy, aircraft design and construction, and military planning, vision and war, that composed the national effort in attacking the problem of jetted supersonic flight. The 1940 Collier Trophy award recognizes the coordination between these essential activities in producing a single astronomical achievement.

The Collier Trophy, which is administered by the National Aeronautic Association, was awarded by a committee headed by John F. Victory, executive secretary, national advisory committee for aeronautics. Representatives of every segment of the industry were members of the committee.



## XT-30 Mockup Is Completed

Douglas Aircraft Co. has completed the mock-up of its XT-30 trainer at its Santa Monica plant. The mockup was built under an experimental Air Force contract. No prototype construction or production of the plane is planned at this time. Actual flight is about a year away. That illustrates the engine built in the nose giving the pilot a clear view forward.

The XT-30 was designed for a top speed of 268 mph at 33,000 ft, and a cruising speed of 190 mph, giving it an endurance of up to 1.5 hours. It has

Design of the XT-30 was submitted to the Air Force twice; competitors were by North American's T-25. Principle feature of the XT-30 design is the constant velocity provided by the Wright R-1300 engine at all of the cockpit and during the approach through a shift range under the cost-

design range weight of 6000 lb. and a service ceiling of 26,000 ft.

The XE-3000 trainer has a wingspan of 18 ft. 4 in. with landing length of 16 ft. 9 in. It has a fuselage landing gear and tandem seating with dual controls. Craft was intended primarily as a trainer from the start, but not solely.

The XT-30 was designed for a top speed of 268 mph at 33,000 ft, and a cruising speed of 190 mph, giving it an endurance of six to 15 min. It has a design gross weight of 6000 lb and a service ceiling of 29,680 ft.

The Douglas trainer has a wingspan of 36 ft 4 in. with fuselage length of 36 ft 9 in. It has a two-tyck landing gear and tandem seating with dual controls. Craft was intended primarily as a trainer for new pilots, but not adults.

## CAB Would Tighten Nonskilled Exemption

The nation's large magazine publishers covet and their talent agent allies have snatched some lightning revisions of the scheduled execution.

Proposed changes in Section 382.1 of the Economic Regulations centered on public revenues by CNE last week would increase the general exemption of about 300 large irregular caskets 30 days after the system became effective. Therefore, each nonstandard line using transport type equipment would be permitted to operate only through an individual contract.

**Bond's Power:** Strengthened—Large vessels cannot sail to individual transmitters within 30 days after the seizure is processed would be permitted to continue operations under the current market operations until CAR grants or denies the new operations. The proposed change in 2021 would generally strengthen the Bond's power to deal more effectively with both large and small vessels when operations become too intensive. The revised provisions that a noncommercial carrier, even if registered, is not a bonded vessel, no penalties beyond those set forth in the regulations.

Consistent with the proposed changes in 2011, CAB issued a detailed interpretation of what constitutes legitimate irregular service. Nonleads were allowed to study examples prepared by the Board to determine whether they are conductive of a lead under examination.

CAR's latest move seeks to prevent the widespread practice of placing together individual irregular operations of two or more carriers to make an overall pattern of irregularity. Chief mechanism for such practices is the use of a single ticket across the several carriers—a ticket he bought under clear CAR scrutiny.

Large corporate owners would also be forbidden to establish plant sites with other laws. Comments on the 201 revision are due by Jan. 15 and will be considered before CAA takes final action.

Propulsion Future  
Outlined in Lecture

A long look into the future of our cattle population, which revealed performance possibilities considered then impossible under present standards, was provided engineers by the 1948 Wageningen Memorial Lecture in Wageningen, D. C., last week.

The lecture, sponsored annually by the Institute of the Aeronautical Sciences, was delivered by Alex Silverstein, director of wing tunnel and flight research division, NASA, Lewis Field.



CAN YOU TELL WHICH IS WHICH?

Two models of Grumman's new Navy jet fighters, the FVW, are shown in flight. FVW3 (foreground) is powered by the Allison J33 jet engine while the FVW2 (rear) is powered by an improved British Nene engine built by Rolls-Royce. Pratt & Whitney will build the Nene under license for production model Pacific Grumman will produce two separate models as designated above since the engines are not interchangeable.

Propulsion Research Laboratory, Cleveland, Ohio

Unlike reciprocating engine interest and development, which grew rapidly suddenly through the years, gas turbine microturbines and engines now have designers to guide them onto the future with identified possibilities and limitations clearly outlined. Selection is based on the possibilities of the complete overall engine spectrum compared reciprocating, turboprop, turbojet, ramjet and solid, and indicated clearly that these engines, with the exception of the reciprocating type, are such at the beginning of what may be called their development life.

- Increased compression ratios to 20 or 24, which are five to six times greater than those currently used. This can be accomplished by the use of the superionic compressor or by combinations of radial flow and axial flow compressors in tandem.

\* Increased turbine inlet temperatures to 2700-2800 deg. F., or double those in present use. This may be possible through the use of liquid or air-cooled turbine blades in combination with a more heat-resistant turbine blade alloy.

• Increased combustor input to the turbine to as high as 75 million Btu/hr. of combustor volume. This is about 17 times the heating energy produced in generic combustors. This can only be produced as a result of the increased compression outlined above and by improving the mixing and burning processes within the combustor.

- Improved heat-resistant materials must be found to accommodate the temperatures mentioned above. The present outlook for metal alloys is gloomy and brightest hope for the future appears to be ceramics and composites, especially bonded to metal.

## USAF Completes Two Nonstop Flights

The B 30 was scheduled to flight (due to a special modified Boeing B 29 aerial tanker). The B 308 was not scheduled.

This demonstration of stimulus bomb usage was made as a part of the operational testing program in the two new bomber types by the Strategic Air Command Air Secretary William S. Strickland. He said the B-59 aerial refueling operation demonstrated that it was now possible for an aircraft to fly around a target in the world by means of servicing from flying tankers. At the same time USAF officials said the special striking force of six SAC bomber groups would be equipped with flying tankers for long range operations.

## Top Officials Change At Curtiss-Wright

Control Wright Corp. has a new president and chairman of its board of directors and executive committee as a result of top executive changes announced last week.

Gay W. Vaughan, new chairman of the board, is succeeded in the presidency by William C. Jordan. Paul Shuchin becomes chairman of the executive committee, a new post. Jordan also is elected president of Custer-Wright schools. Wright Aircraft Corp.







## Pioneer in Air-Frame Tools—

### Producer of the World's Largest Line



Construction of the first all-metal airplane presented the problem of driving thousands of rivets without undue work-hardening or injury to the surrounding metal.

CP engineers met the situation with the first airplane riveter—designed with controllable speed, and delivering just the right blow and exact impact.

Steadily maintaining its leadership over the years, CP today offers the world's longest line of pneumatic and electric air-frame tools. Ready for the heavy bomber program is the wide line of Pneumatic Impact Wrenches, including angle types, for running on or off rails up to 1/2" bolt size.

Write for Air Tools Catalog No. 564, Ninth Edition.



**CHICAGO PNEUMATIC  
TOOL COMPANY**

General Offices: 1000 North Dearborn Street, Chicago, Ill. 60610

Branch Offices: All major cities. Distributors: All major cities. Branch Offices: All major cities. Distributors: All major cities.

establishment of IAM's 650,000 members. IAM left A. F. of L. in 1946, claiming a 34-year dispute with the Carpenter Union over installing plant machinery. Resolution would take the stress out of the efforts of Dave Beck, and his A. F. of L. Trustees to take over bargaining rights for the approximately 14,500 production workers represented by IAM, when the strike began April 25.

► **Direct Conflict**—The Trustees set up a new Seattle local, 451, Workmen and Mechanical Workers Union, purposely to organize Boeing, thus entering into a direct jurisdictional conflict with IAM. Beck at that time had his plans of Boeing would change "only if the Aero Mechanics referred to A. F. of L." (Associated Press, Sept. 23).

The Trustees are going ahead with their organizing drive with A. F. of L. organizer John Sweeney assigned the job. The Trustees now claim to have closed as many members as Boeing as the Aero Mechanics. When the NLRB decision was still pending, Sweeney said he would continue his efforts even if NLRB upheld the Aero Mechanics. But if IAM regains A. F. of L., the picture might change.

## PRODUCTION BRIEFING

Irving Air Choke Co., Buffalo, N. Y., is completing work on a \$135,000 French order for 791 parachutes.

Putt & Whitson Aircraft division of United Aircraft Corp. reports that it has produced more than 47 percent of all powerplants installed in U. S. commercial transports operated by scheduled domestic airlines.

Macgregor Aircraft Co. is moving into new quarters adjacent to the Melropolitan Airport, Van Nuys, Calif. It will take about six months to complete transfer from existing plant at Van Nuys, Calif. Company plans to increase its plant from about 100 to 400 next year to fulfill backlog of approximately \$1.7 million.

Thompson Aircraft Tool Corp., San Francisco, has received an Air Force contract totaling \$780,000 for outfitting six airplane lines, some of which have been used by the Air Force on the Berlin airlift.

Hyma Mfg. Corp., Pasadena, Calif., has been bought by Midland H. Ryan, president, Ryan Mfg. Co. and Ryan Mfg. Co., Mansfield, Ohio. Hyma specializes in manufacture of aircraft hydraulic components.

## Truarc inverted rings align shafts, save 20 minutes . . . \$100 per unit



Production savings and sales advantages result from redesigning with four Truarc rings

- Eliminate two drilling, two tapping operations, and the fabrication of two collars and four pins
- Eliminate two cut screws
- Cut dis-assembly, re-assembly time 72%
- Make for closer tolerances
- Make drive shaft self-aligning; operation by wear greatly elongated
- Make more delicate adjustments easier for user
- Streamline end view
- TOTAL OVERALL SAVINGS, per unit . . . \$1.00



Eliminate end drill of Skyview Condenser Ex. Insulator, where Truarc Inverted Rings bring three guide collars into line for accurate movement of ballast spring, improve product.



Like the Skyview Camera Company of Glenside, Pa., design with Truarc and you will cut costs and improve your product too. Whenever you use machined collars, pins, bolts, snap rings, cotter pins

—there's a Truarc ring that does a better job of holding parts together. All Walides Truarc retaining rings are precision engineered, easy to assemble and dis-assemble, retain accuracy always to give you a never-failing grip. They can be used over and over again. Send us your problem. Walides Truarc engineers will be glad to show how Truarc can help you.



**WALDES  
TRUARC**

**RETAINING RINGS**

WALDES ENGINEERING, INC., 1002 HUNTER CITY LANE, NEW YORK

WALDES ENGINEERING, INC., 1002 HUNTER CITY LANE, NEW YORK



Send for new Truarc booklet, "New Development in Retaining Rings"

Walides Engineering, Inc., 1002 Hunter City Lane, New York 17

Name \_\_\_\_\_

Title \_\_\_\_\_

Company \_\_\_\_\_

Business Address \_\_\_\_\_

City \_\_\_\_\_ State \_\_\_\_\_

...want more iron or steel?

# TURN IN MORE SCRAP!

HERE'S WHAT YOU CAN DO TO HELP  
RELIEVE THE SCRAP SHORTAGE

**1.** Put some one individual in charge of scrap in all departments of your business and GIVE HIM AUTHORITY TO ACT.

**2.** Comb the plant and yards for dormant scrap, abandoned equipment, old boilers, pipe, moulds, obsolete dies and parts, material now wasting away which has salvage value.

Survey all plant equipment, particularly idle stand-by or discarded machines, with a view to scrapping all not convertible to useful production.

Consult your scrap dealer for advice on types, grades and sizes.

**3.** Segregate each class of scrap and supervise its handling to avoid contamination. This will increase its value. Identify, classify and provide separate containers, clearly marked, for each class of scrap material.

Disassemble discarded equipment promptly into its components—electrical, fastenings, hardware, etc.—so that these parts may be utilized or scrapped.

Sort sweepings and miscellaneous waste to recover scrap values.

**4.** Consider reminders in the form of posters, illustrations of rights and wrong methods, pay envelope enclosures, house organ publicity, etc., are potent aids to the scrap recovery program.



THE INTERNATIONAL NICKEL COMPANY, INC. 87 WALL STREET  
NEW YORK 5, N.Y.

**MORE SCRAP—MORE STEEL**  
Move your scrap to the mills—  
Sell it...ship it...move it now!

AVIATION WEEK, December 30, 1948

## ENGINEERING



### Low-Drag Accented In All-Wing

Configuration slashes parasite resistance to boost performance, but problems of stability and control are not yet fully solved.

By Robert McLaren

The all-wing airplane is a logical evolution of the flying machine. The history of aeronautical science has been, largely, a 40-yr. struggle to reduce the airplane's parasite drag.

From the original Wright Brothers plane of 1903, windtunnels progressed to the enclosed hangar, single bay wind-tunnel stage arrangement, reduction of the height to the high-wing monoplane, introduction of the low-wing monoplane, retractable landing gear, NACA airfoil cowls, full cantilever structure and all-metal monocoque construction.

And now has come the elimination of the tail surfaces and fuselage, leaving merely the wing.

It would seem that this configuration typifies an evolution of form for appearance or can go no further in this direction.

► **Configuration Details**—So the all-wing plane does not represent a new and "radical" type of aircraft from a constructional point of view, for it is the configuration for which we have been striving for four decades.

However, since tail surfaces have, throughout the years, comprised the principal source of aircraft stability and control, their removal has created a new and interesting aerodynamic problem. It is important, therefore, to bear in mind these two separate and distinct factors

in an appraisal of all-wing aircraft.

It is equally important to distinguish between the all-wing and the tailless airplane. Planes of the latter type have been flown successfully almost since the time of the Wright Brothers.

Spain does not permit even a brief discussion of the long list of tailless aircraft, but without exception all of these series of planes featured one or more vertical surface members in their configuration. The tailless airplane, then, is an aircraft without a "tailplane," as the British call it.

The unique contribution of John Knaflitz Northrop to aeronautics is the complete elimination of vertical aircraft and the creation of a true all-wing aircraft.

Actually, he has not yet reached his ultimate goal of a smooth exterior surface without protrusions of any sort, for Northrop Flying Wing type forms to date have included canopy, propeller shafts, gun barrels and other external shapes through practical necessity.

A lighter version of the Northrop XH-59 fighter bearing a pure (and closely approached) the ideal all-wing craft, however, with the original configuration displaying only a slight bulging of the wing leading edge at the center to accommodate the pilot's fuselage.

► **Drag Reduction**—Basic simplicity of the all-wing over conventional types is its elimination of the parasite drag pro-

duced by fuselage and empennage. Average maximum drag coefficient of several large, modern aircraft, such as the Boeing B-29, Convair B-24, Douglas C-54, is 0.025, whereas the maximum drag coefficient of several Northrop Flying Wings varies from 0.018 to 0.011, the latter representing the B-15 bomber. Northrop has actually achieved the long-sought "double-0" (0.02) minimum drag coefficient on some designs as model forms.

Therefore, the all-wing craft exhibits a maximum drag coefficient more than 50 percent below that of conventional planes. It is this inherent ability of the all-wing configuration to slash parasite drag in half that is its foremost performance advantage.

Unfortunately, however, this parasite or "form" drag is only a part of its total drag, so-called being made up of induced drag, a resistance created as a result of the lift of the wing. But at high speed (low lift), the parasite drag is as high as 50 percent of the total drag, and since the all-wing has only half the average value of parasite drag, it will have only 60 percent as much total drag as the conventional plane.

This means, simply, that the all-wing planes require only 60 percent of the power required by a conventional type to reach the same high speed.

Since power required varies as the cube of the velocity, the all-wing will fly



Latest Flying Wing in Northrop B-69 jet bomber. Use of thin fins compensates for absence of propeller installation.

( $1/V^3 = 1/18$ ) 18 percent lighter than a conventional airplane with the same power.

► **Range Improved**—At low speeds, such as during, which require a considerably higher lift coefficient, the proportion of parasite to total drag is substantially less. Moreover, since, according to Joukowski's law, an airfoil when parasite and induced drag are equal. Thus, if parasite drag is 30 percent of the total drag and the lift wing has 50 percent less parasite drag, then its total drag is only 75 percent that of a conventional airplane at the cruising speed of the latter.

This means that the all-wing aircraft can cruise at only 75 percent of the power required by the conventional case at the same speed. Since power varies directly as power required, the all-wing can fly one-third farther (1/75) than the conventional plane with the same amount of fuel.

If the all-wing craft is permitted to cruise at a higher speed in which its low parasite drag constitutes a greater portion of the total drag, then it can fly only 40 percent farther than the conventional plane with the same amount of fuel.

► **Structure Efficient**—Because the fuselage and nacelles are eliminated from the all-wing, these weight and distribution time are eliminated, resulting in substantial savings in all three factors.

Weight of the fuselage and tail surfaces of a conventional airplane the size of the Northrop B-35 would be 12,000 lb. This is a net saving that can be applied to useful load in an all-wing type having the same wing loading as the equivalent conventional aircraft.

One of the important indices to airplane "efficiency" is the ratio of useful load to gross weight, which gives the percentage of total weight carried in useful load. Engineers have long held a figure of 10 percent as a goal in structural design and most present-day aircraft have a figure of 10-15 percent.

Because of its great saving in fuselage

and tail surface weight, the Northrop B-35 empty weight is only about 40 percent of its maximum allowable gross weight, giving a figure of 50 percent useful load.

And, because loads are carried within the wing itself, the structure can be built stiffer and more efficient since even load-distribution can be achieved throughout the wing area, rather than concentrated largely in the fuselage of a conventional type.

► **Wing Alone Stable**—While it is apparent from the previous discussion that the all-wing aircraft possesses really superior performance characteristics over the conventional plane because of its substantial reduction in parasite drag, removal of the tail as the primary source of stability and control creates extreme problems.

It has long been known that a wing offering almost a symmetrical airfoil or a section incorporating reflex airfoils at the trailing edge and with dihedral, possesses all the aerodynamic characteristics necessary for both longitudinal and lateral stability. That, an all-wing plane with a straight wing can be built and flown successfully.

To provide a trimming control, a segment of the wing trailing edge is hinged to act as an elevator. This adjustment, one of the major drawbacks to the all-wing design, however, for movement of this surface changes the center of the attached aircraft, hence affects the wing's lift, drag and pitching moment.

When this reflex is moved up, it reduces wing loading, and, therefore, the wing lift. This lift loss reduces the wing's minimum lift coefficient from 10 to 40 percent, resulting in a lift loss of 20 percent and stall speed substantially higher than with conventional craft.

► **Wing Area Added**—Because of this reduction in minimum lift coefficient, the all-wing type must incorporate more wing area for a given gross weight than is a conventional aircraft.

As a result, for example, the Northrop

B-35 has the comparatively modest design gross weight wing loading of about 41 lb./sq. ft. compared with 75 lb./sq. ft. of the vertiginous B-29. Wing loadings as high as 100 lb./sq. ft. have been attained in some conventional designs.

While this comparatively light wing loading has several reported advantages, particularly with respect to take-off and landing, the additional wing area produced drag which penalizes the all-wing in obtaining its maximum efficiency.

While the Northrop Flying Wing attains a maximum lift coefficient of only 1.5, the average of several large conventional aircraft is 2.5-3.5 percent deficiency in the all-wing type.

As a result, the all-wing, to attain the same landing speed of a conventional design of same size, must load at 75 percent less weight.

► **Low Landing Weight**—This deficiency is experienced only under conditions requiring the use of the maximum lift coefficient, such as in take-off, landing and stall. With the trailing edge control raised, the all-wing aircraft possesses all of the advantages previously outlined.

It has become customary to place heavy strength with two weight-sensitive areas: the wing and a maximum permissible landing weight, the latter some 10-20 percent less than the former. Since maximum permissible landing weight in the all-wing is 35 percent less than flight weight, it actually is only about 25 percent worse off than the average conventional heavy aircraft.

To reduce this loss of lift associated with deflection of the wing trailing edge, wing rootchord has been used, and it is this simple change in planform that has increased the capacity of the longitudinal stability difficulties of the type.

Thus are maximum masses why rootchord is an effective solution to all-wing design problems.

► **Advantage of Sweep**—Yet an aircraft to be longitudinally stable, the center of

gravity must be forward of the wing aerodynamic center since the wing alone has a positive pitching moment.

By placing the c.g. forward of this point, a negative pitching moment is created which tends to oppose the wing positive pitching moment.

On most solid sections, the aerodynamic center is located at about the quarter chord point, all of which edges forward of the wing would require that all of the weight be concentrated in the forward 25 percent of the wing, leaving a large part of the rear 75 percent as useless space.

In sweeping back the wing, the area aerodynamic chord can be shifted rearward any desired amount and the aerodynamic center located anywhere accordingly. This configuration then provides substantial area forward of the aerodynamic center in which to place the airplane load items.

Second advantage of sweepback is that wing tip areas are a substantial distance off of the airplane's c.g., so that control surfaces placed in these regions possess an effective "rod length," their load thrust thus distance producing the required trimming moments.

As a result, their use may be reduced to practical values and only a minor change in lift on the control surface will be required to produce the desired pitching moment.

Third advantage is that sweepback permits use of highly lift bearing edge flaps along the outer-section. Undesirable pitching moments created by flap deflections are thereby minimized since moment arm off of the c.g. is comparatively short.

Actually, if sufficient sweepback is used, flap deflection can provide a desirable pitching moment and then be used as a device which does control. Its load would be located forward of the c.g.

► **Sweep Drawbacks**—Major drawback of sweepback is its creation of spanwise flow. This difficulty constitutes the main stability problem of the all-wing craft.

The planform is needed by the progressively reversed location of the maximum pressure point as sweepback increases. Thus, at any point on a wing chord there exists a zone of lower pressure adjacent to it in the direction of the tip.

Since air tends to flow from a region of higher to one of lower pressure, a tipward drift of the wing boundary layer is produced. Since this drift increases the pressure over the wing upper surface and thus reduces lift in the tip area, the wing will stall first, as a result of its increased boundary layer stall propensity induced as angle of attack is increased.

Thus are several solutions to the problem of tip stalling, most of which have been tried in various conventional



Northrop Flying Wing B-35 bomber showed previously built version of all-wing craft.



Earlier version of Northrop all-wing aircraft was this N1M.

planes with moderate sweepback.

Wing twist is one of the simplest and most effective methods. This has been used in the Northrop Flying Wing. Since the tip stalls at a lower angle of attack than does the subsonic region of the wing, the area in the vicinity of the tip is given a washout (lower angle of incidence with respect to horizontal incidence line).

This system cannot be used to excess, however, because it creates serious drag penalties when the wing is at a high speed (low lift coefficient). Since the inboard portions of the wing will be flying at low or zero angle of attack, the tip region will be doing it a negative stroke of attack, with attendant high losses.

► **Slot Used**—Most serious effect of progressive tip stalling is that control surfaces are located along the trailing edge of the tip region and their effectiveness is lost part when needed most.

A second solution to the problem is use of slots near the leading edge or a slot at the leading edge. Properly designed slots can increase the stalling angle of the tip region as much as 10 deg, but their effectiveness hinges on extending them well ahead of the tip (40-50 percent span). Drag of slots and slots at the high-speed re-

gion has been a major objection but this can be overcome by the use of retractable or sealed doors.

The Northrop Flying Wing also uses slots near the tip, which are sealed in high-speed conditions and opened in low speed flight.

A third method employs flat plate separators, or air "dumps," located about halfway out on the wing.

To be effective, these devices must extend completely across the wing trailing edge and be moved almost to the leading edge.

They prevent adverse flow of secondary layer in mechanical fashion by creating a physical barrier to its movement.

The Northrop B-69 Flying Wing also uses this method, with a separator located on either side of the inboard tanks.

Drawback to use of these devices, however, is the tendency to create a new stall region inboard of the plate itself.

► **C.G. Control**—So long as c.g. remains ahead of the aerodynamic surface, the all-wing will be statically stable longitudinally. Location of c.g. is controlled fairly easily in the design stage through proper location of load items.

Particular attention must be paid to location of fuel and oil tanks and bomb





*too much territory for... any grapevine!*

From Seattle to Miami... from Pease Lake to San Diego... and at a thousand points midway, aviation news is being made! Jet propulsion... supersonic speeds... rocketships... space-shuttles... electronic flight control... helicopters... three-dimensional radar... guided missiles... airports of fantastic dimensions...

The day when everybody just naturally "knows" what's going on in the aviation business is over! Too many new models, methods, developments, discoveries! Gossip and the grapevine just can't cover the whole U.S. and three other continents. The field's too big; subject too important... to go without a publishing service that reports all aeronautical developments... fast enough and frequently enough to be useful! That is what *Aviation Week* is edited to do... to deliver all significant aviation information to all the important people in the aviation business!

Full and accurate reporting of all significant developments in aviation is our business. On-the-spot reporters and correspondents send it from every corner in the world. A seasoned staff of editors, writers and technical specialists check, follow, process and print; put out a

new edition every week. Today there isn't any other way of knowing what's going on in the field except through *Aviation Week*!

In consequence, *Aviation Week* is looked for every Monday, closely checked, thoroughly read, relied on, passed around... makes every activity in the field, and everybody of importance in manufacturing, engineering, design, research, operation, government, military services, supply sources, allied industries.

*Aviation Week* is the first medium to deliver all of the aviation market to the advertiser... now supplies sole the coverage available before only through second. And, as a result of the new airplane program, *Aviation Week* has access to today's most important industrial markets!

If you have anything to say or sell to aviation in any of its sectors, *Aviation Week* is your most effective, fastest and cheapest spokesman and witness. There never was a time like the present... with aviation requirements rising for billions of dollars of industrial production!... The nearest *AV* office can give you data and details.



**AVIATION  
WEEK**

Aviation Week Publishing Co., 225 West 41st St., New York 18.  
Offices in Boston, Philadelphia, Pittsburgh, Cleveland, Seattle,  
Chicago, St. Louis, Dallas, Atlanta, San Francisco and Los Angeles.

**AVIATION  
WEEK**



MEMBER AEC • AEP





**Bridgeport Upholstery Fabrics** are 100% wool, woven smooth as chambray or avoid clinging to details.



**Bridgeport Upholstery Fabrics** are certified tearproof by C.A.A.—they do not support combustion.



**Bridgeport Upholstery Fabrics** are tightly woven to resist dust and stains. They can be brushed bright in a moment.



**Bridgeport Upholstery Fabrics** are so constructed that they can be installed up to 30% quicker.



**Bridgeport Upholstery Fabrics** are available in many colors and weaves to suit your plane interiors.



Specify **Bridgeport Aircraft Upholstery Fabrics** showing weaves, prices & delivery dates.

**Bridgeport FABRICS, INC.**  
FAB. 1637  
BRIDGEPORT 1, CONNECTICUT

This means that in addition to providing enough pitching moment to raise the wing at the lift coefficient corresponding to the ground angle of the airplane, an additional pitching moment is required to replace the nose wheel.

An average value for an airplane the size of the B-35 is  $-0.335$ , whereas the total up pitching moment of the B-35 is only  $0.25$ . Inability to meet this requirement is inherent in the all-wing lift because of the extremely short moment arm available to the elevator control and the small amount of load it develops at low speed.

► **Elevators Used**—Northrop has combined the functions of elevator and aileron into a single trailing edge surface termed elevon. This combination surface must have a deflection range covering the area of the wings separated separately for aileron and elevator.

For example, when the surfaces are raised as elevators to permit low-speed flight and are further deflected as ailerons, very large pitching moments are created that may be accompanied by only small aileron moments because of the stiffness of the upgoing elevon.

Northrop solved this problem by the use of a "trim flap," a moving segment of the wing located just forward of the rudder. This is used to supply most of the lift of low speed, thereby decreasing the upward deflection of the elevon and permitting them to be deflected even a greater degree as ailerons.

► **Weathercock**—Low aerodynamic control of the Northrop Flying Wing is obtained by drag rudders located at the tips. These are split flaps opening both up and down simultaneously.

Since they operate in regions of turbulent air, effectiveness is low at small deflections. Mounting of these rudders on the tips of the wing causes rudder deflection to create undesirable rolling moments when the tips are deflected.

Actually, however, the rudder is little used as the Flying Wing never normal form as the wing alone carries the lift. Each of the surfaces carries the lift wing to possess extremely low lateral damping characteristics. Combination of low weathercock stability and high lift force directed inboard for all-wing craft susceptible to "Dutch Roll" oscillations.

However, low weathercock stability makes the period of the oscillation considerably longer so that rudder control can be used to effect recovery.

► **However**, if rudder control is weak, the roller's time of response may be the cause in the period of the motion, an error recovery extremely marginal.

► **Play Design**—Location and design of landing flaps on an all-wing craft has proved one of the most difficult of all design problems. The use of wingtip flaps has caused the problem, since the flaps may be recessed on the inboard portion

of the wing, as in the Northrop Flying Wing, where the pitching moment is reduced because of the short moment arm.

The split flap is desirable because of the relatively small pitching moment moment necessitating the production of a great lift increment. This effect can be further improved by moving the flap large line position forward, since this does move the center of the flap load forward along the wing chord nearer to the aerodynamic center of the wing.

However, proper flap design minimizes, but does not eliminate, the undesirable pitching moment, and this adverse effect is minimized in the all-wing craft in the form of limited center of gravity travel.

In the B-35 the limit is only 6 percent of the mean aerodynamic chord compared to 12-13 percent in conventional aircraft. While this imposes an aerodynamic limitation, its practical advantage is measured by the fact that the overhauls produce a greater mean aerodynamic chord so the actual values of travel are comparable.

In addition, load limits may be distributed over a comparatively great area compared within these limits as compared to the conventional plane.

► **Split Surface**—Steady spin characteristics of all-wing are essentially the same as in conventional craft, contrary to widespread rumors.

However, recovery from the spin is considerably different than with conventional aircraft. The B-35 will continue to spin with the rudders against the spin and the conventional aircraft recovery method of reversing the rudders and then moving the stick forward will not effect recovery on the all-wing aircraft.

All-wing spin recovery is made with elevons and, in most cases, follows the rudders as kept with the spin, the control column is moved full forward and the wheel is not hit against the spin.

The all-wing spin resistant and will spin only with the rudders with the spin, the wheel with the spin and the control column is moved full back.

► **Development Method**—The all-wing possesses extremely promising advantages in performance over the conventional plane, but these are accompanied by several stability and control problems which here, as yet, have only partially solved.

Obviously, the greater efficiency of the all-wing configuration makes it a superior aircraft when compared to those of conventional configuration and it is these performance advantages that make the extensive research and development required for the full solution of its stability and control problems well worth while.

John K. Northrop has made profound progress in this direction and can rightfully be regarded as the pioneer designer of all-wing aircraft.



## FOR YOUR CONVENIENCE... A COMPLETE SHERWIN-WILLIAMS COLOR LINE!

19 carefully selected colors—plus black and white—in the complete Sherwin-Williams Aircraft Color Line! And all of them are available in four types of finish: Open Pigmented Nitrocellulose, Open Pigmented Butyrate Dope, Open High Gloss Lacquer, Kew Synthetic High Gloss Enamel.

Offering color matches for most aircraft manufacturers' standards, the colors in the Sherwin-Williams line have been chosen for their purity, richness, glossiness, brightness... and outstanding durability. Pigments are pure synthetic colors, free from any staining (except where blue is lightened by addition of white).

In addition to this comprehensive color line, Sherwin-Williams offers other finishes for every aircraft and airport application. The Sherwin-Williams Co., Aircraft Division, Cleveland 1, Ohio. (Export Division, Newark, New Jersey).

Products of Sherwin-Williams Industrial Research



**SHERWIN-WILLIAMS**  
AIRCRAFT FINISHES



HOW THICK IS A BUBBLE?

Prody tagged "bubblecoater," this electronic device developed by General Electric is used by Bell Aircraft Corp. to measure thickness of Plexiglas canopy on its helicopters. Gas surrounds electric needle and operates on resistance principle. Read resistance distance between small steel block

travelling inside of bubble and negative device held against bubble. Thin glass thinness of canopy at any point selected. Coaxial gas measures thickness requirement of 0.010000 and 0.000000 with 75/10000 in length. GEC measures up the measuring device can detect 5 percent variation.

## NACA Investigates High-Altitude Gusts

"Clear as a bell" may become a familiar term in the coming years if present scientific investigations of this disturbing phenomenon produce expected results.

While the persistence of gusts near cloud formations at altitudes below 50,000 ft is well-known and thoroughly analyzed natural occurrence, pilots have often reported gusts in clear air at altitudes above 50,000 ft—hence the so-called "layer" has increased the frequency of the reception of such reports.

Although in the past these reports were either discounted or assumed to represent isolated occurrences, ability of present aircraft to operate at altitudes above the so-called "layer" has increased the frequency of the reception of such reports.

► **Joint Research**—To provide comprehensive scientific information on this phenomenon, the National Advisory Committee for Aeronautics has launched a research program utilizing a "joint" approach to provide the required information.

This device is an adaptation of the boundary anemometer. While the latter transmits cold temperatures, density and pressure data, the new apparatus transmits only the aerodynamic information as it decelerates slowly from high altitude.

► **Operational Details**—The gustometer is a small box housing an NACA accelerometer which leads signals into a tray transmitter. These pulses are tele-transmitted to the ground where they are recorded for subsequent analysis.

The apparatus is suspended from a balloon, which, upon release, carries the instrument to altitudes above 100,000 ft.

At this altitude the low stagnation pressure allows the balloon to expand and burst. The gustometer is then lowered to the ground by parachute at an average rate of 1000 ft per second, its average altitude 10,000 ft, thereby returning about 14 ft. for descent.

Obviously, a considerable quantity of data on conditions encountered can be recorded on this period.

► **Initial Tests**—First experiments with the new device took place last summer at Edwards Air Force Base, Calif., under the joint direction of the NACA, Weather Bureau and the 303rd Reconnaissance Group (VLR) Weather.

First tests were made over the Mojave Desert, where clear air turbulence has been reported most often from any other part of the country.

Value of the new project lies in the possible importance of the research findings to the design of high-speed aircraft and to the selection of test conditions at their extreme altitudes.

The presence of severe gusts would require a substantial increase in the strength of the craft to carry the additional structural loads imposed.

## Captured Wind Tunnel Reaches Mach 5.18

The unique "Kochel" test tunnel has been placed in operation at the Naval Ordnance Laboratory, White Oak, Md., and has attained Mach 5.18—highest yet reached in an installation of its size—in preliminary tests.

This velocity was attained at a temperature of -377 F. and is the equivalent of 3977 mph. at sea level under standard conditions.

► **Tunnel History**—The tunnel is so named because it was located near Kadish, Bavaria at the time of its capture by Allied soldiers. It was originally built at Peenemünde but was moved to a new site at Kochel to escape Allied bombardment.

It was dismantled, shipped to the U.S. and reassembled by Navy Bureau of Ordnance under the direction of Capt. R. M. Mac-South.

The facility actually includes three separate tunnels operated from a central power supply. Two are 48 in. square (15.75 x 15.75 ft.), the other 60 in. square (17.1 x 17.1 ft.).

Power is supplied by a large 50-hp. motor which is coupled to a servomotor by a 308-hp. electric motor driving two rotary vacuum pumps.

► **Operation**—When the test section of one of the two larger tunnels is ready, a quick-operating stop cock which is coupled and the pressure differential between stagnation pressure at the tunnel entrance and exit is measured. The test section produces the high velocities across the throat.

However, time velocities are obtained only between the time the stop cock is opened and the test pressure is applied. The velocity is measured by a pitot-static probe which is inserted into the test section. The probe is moved along the throat and into the entrance to stop the supersonic flow. Repumping time is about 15 min. The two tunnels are used to produce more rapid adjustment of density and pressure of test air in the tunnel set in use.

In contrast to this short test period, however, the 18-in. tunnel can be operated continuously by the intake of the vacuum pumps, although this, of course, requires the other two tunnels operate.

► **Performance Improved**—Much of the equipment of the tunnel is new, particularly the valves, control and pumps, and various other items of equipment.

Actually, performance of the tunnel has been substantially improved in the re-building operation, since its previous maximum speed was Mach 4.35, and is preliminary research on the N-2

## NEW AVIATION PRODUCTS

### New Synchrostat

New version of Synchrostat, made by Kollsman Instrument Div. of Sperry Corp., 35 45th Ave., Elmhurst, N. Y., is reported to have electrical output as much as 30 percent, with weight and volume decreased to 1/3 of former unit. Other functions in inductive electrical output whenever desired. Output is small, small conventional synchro cannot be used. Lightweight rotor makes it useful where very high accelerations and rapid oscillations are to be measured. Device is stated as readily adaptable to light and engine instruments not yet incorporated in use of aircraft dial and pointer instrument or in blind instrumenting instrument to be accurately located. Other typical applications are in airspeed and altitude controls for automatic pilots, flight rate recorder inputs, air traffic instrument controls, bank and gun sight computer inputs, fuel gauging, and in most conventional synchro systems.



### Strain Rate Pacer

Operating in conjunction with company's testing machines, new type strain rate pacer is announced by Kollsman Instrument Works, Philadelphia 42, Pa. Feature is reported to be more accurate and direct indication of displacement rate between test specimen and grips as compared with getting one of various of testing machine combined. Transmitter unit is connected to company's autographic recorder and controlled by transmitter on specimen. Indicated unit, a small indicator, is connected to recorder by extension cable with pull gauge. Readout elements of indicator are dotted disk, rotated by synchronous motor at predetermined speeds, and central pointer rotated by self-propelled motor under control of self-propelled generator and in recorder, at rate pro-

portioned to strain in specimen. Strain rate in specimen can be set and maintained by adjusting machine load rate control units until specimen speed coincides with predetermined dial speed. Pacing speech is combined feature of strain-film magnification and speed of rotation of pacing disk.



### D. C. Power Supply

Developed for use with instruments requiring highly stable d.c. voltages, precision regulated power supply made by Kollsman Instrument Co., P. O. Box 1775 Elmhurst, Va., is stated to be adaptable to wire strain gauges, position potentiometers, recording oscillographs, and other laboratory devices. Output voltage regulation is reported better than 0.1 percent and ripple less than 0.01 percent. Device is adjusted by manufacturer for optimum regulation at any specified load of from 5 to 30 can add for output voltage from 0 to 100, Regulated current output is 2.5 A. 110 V. power for input line voltages ranging from 75 to 135 v. at frequencies from 50 to 400 cps. Unit measures 6 x 5 x 6 in. and weighs 6 lb.



### Mechanic Aid

New heavy-duty torque bar, made by Richmond, Inc., 2516 E. 17 St., Los Angeles 23, Calif., is stated to possess extreme accuracy in range from 200 to 600 lb.-ft. Device is set for specific requirement and when desired torque is reached "click" is heard and immediately, small bellows in handle tip

operator's hand, thus giving both "sound" and "touch" signals. It is available with or without detachable head or with special heads built to specifications. Standard chrome-plated steel is a standard 1-in. square drive shaft type. Torque bar is available in 1/2-in. diameter. Torque setting.

### For Aluminum Welding

New welding process, known as "Arc control," may be used for welding heavy sections of aluminum and aluminum alloys at joint speeds ranging from 100 to 1000 in. per min., and is stated to permit deposition rates exceeding those obtained by usual welding methods. Announced by Arc Spotweld Sales Co., 66 E. 43rd St., New York 17, N. Y., method consists of feeding removable electrode through a specially operated welding "gas," with control being established from air by inert gas. Miller metal arc welding current and arc a standard welding rod and arc a standard welding rod and arc a standard welding rod and arc a standard welding rod.



### Close-Tolerance Welder

Hydraulically operated torch welder, Type H4B, completely automatic except for loading and unloading is announced by Agate Electric Co., Milford, N.H. While hydraulic pump supplies pressure to operate adjustable plates and flow valve controls fluid cycle, air is used for clamping. Dies are replaceable parts which eliminate cost and make product broad application of work. Try before you buy. Machine will last range for diversified production. Machine is equipped with water-cooled 50-hp. transformer and clamps, welder type magnetic controller and all necessary machine controls. Unit is claimed to be particularly designed to give uniformity of welds and assure close tolerances.





## Troubles of French Air Force

Obsolete aircraft, dollar and sterling shortage, trainer lack and low pay are major problems.

By Boyd Finner

**PARIS**—The plight of the French Air Force today vividly highlights the deprivations of Western Europe.

Here's what the French Air Force now has in planes, men, and supplies:

Planes are worn out and obsolete. Britain has agreed to loan France 30 Vampire jets and some new trainers, but they have not arrived. French pilots still fly 1944 Spitfires, Mustangs, Mustangs, and Thunderbolts.

► **Strength**—Total strength of the French air fleet is about 10,000, of which roughly 1,500 are considered fighters. But most would have been in the air long ago, long before the U.S. or Britain.

► **Control**—Planes account for about 70% of the total number, transport for 10%, bombers for one-tenth, fighters, trainers 900, miscellaneous planes 100, the rest.

Organizationally, the fleet is divided into 15 combat squadrons, eight transport squadrons, one bomber squadron, one colonial and transport squadron.

The First French Air Division based in Germany is the heart of the French combat force. It is equipped with the best planes in the fleet—about 1945 Spitfires and Thunderbolts, includes a reconnaissance squadron. The rest of France's fighters are scattered throughout the colonies with the heaviest concentrations in Indochina, next heaviest in North Africa, a few in Madagascar.

► **Bomber Squadrons**—Bombers have been pushed out of the French Air Force's budget. At the end of the war France was spending three bomber squadrons. Now it has only one Heinkel four-engine squadron based at Bordeaux and converted to transport duty. French airmen generally agree that bombers represent a double expense right now. They argue that France would be lucky to be able to defend itself in a future war, foolish to try to take the offensive.

The Air Force's transport fleet has turned in an impressive record of hard flying over the long distances east of the French Empire. Last year it hauled 134,000 passengers (30 percent of Air France's total) over that 100 million

passenger-mile (10 percent of Air France's total), hauled 11,133,000 tons (13 percent of the Air France total).

But it's hard to see how their record can be maintained much longer without some new planes. The transport corps is flying three-year-old Ju-52s, and DC-3s. About half of the fighters have a year or more of life. But almost all of the DC-3s are flying on borrowed time. And they can't be replaced by French planes while the issue is up.

A grab-bag of light planes and patrol planes makes out the French air fleet. In all there are more than 50 different types. None-100 (one-Mitsubishi 100), four-engine German Heinkel, Cessna, Beechcraft, Cessna-Opel are the most numerous in the light plane category.

► **Industry Behind**—The most glaring aspect of this depressing equipment picture to French airmen is the heavy reliance of the French Air Force on foreign-made planes. The French aircraft industry was badly disrupted during the war. A long time of immobilization and nearly two years of Government mismanagement have tended to keep it that way. It probably will be at least another two years before the industry will become an modern plant in its own right. The French are currently doing a lot of experimental work with design expert to test and fly about 25 jet prototypes—mostly fighters during the current year. But production still is several years off.

Meanwhile the French must continue to patch up their thousand-air fleet with captured engines, parts, and equipment. Foreign buying will be left to a desperate struggle for two reasons.

► **France** is desperately short of dollars and easily out of sterling.

► **French airmen** suspect that they never will be able to buy the newest types of airplanes abroad.

► **Personnel**—Most of the required pilots are getting at hand to fill the planes. Except last year only one graduate of the famous Ecole Polytechnique—historically a demerit-banking ground for an under-trained apt for the Air Force.

Both the volume of new air force vehicles and training facilities have de-

clined in the past two years. Largest group of applicants for air schools consists of naval academy recruits.

Facilities for training aviation cadets, cadets, navigation and so forth still are good. The radio school at Amiens and the parachute school at Rochefort offer training comparable to that of the U.S. or Britain.

But flight training in French Air Force schools is badly crippled by the general plane shortage. The Air Force has 900 trainers—mostly British, given to the French at the end of the war. More than 50 percent of these are left flying day and night. One by one they are being sold. No replacements are in sight.

The French 15th Squadron theoretically is being trained in jets. But training still is exclusively theoretical since they have no jets in which to train.

Knowing the falling off in Air Force expenditures is simple.

► **Low Pay**—Air Force salaries are strictly low compared to U.S. or British standards. A French second lieutenant receives a maximum of 175,000 francs per year (roughly \$575 at the old rate of exchange). His maximum salary is 241,000 francs per year (\$535). He only gets 113,500 francs flight pay per year (\$415).

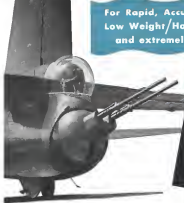
Worse than the low total salaries to airmen is the reduction which has occurred in the percentage of flight pay to basic pay. Second lieutenants in 1944 were paid 25% basic a month plus 25% bonus flight pay. This ratio was maintained with some ups and downs between years. Now that 100 percent rate of flight pay to basic pay has dropped to roughly 11 percent. The professional and social prestige of Air Force officers within the armed forces has dropped with it.

► **Personnel**—New-Prototype soldiers also are discouraged by the fact that chances for advancement to the Air Force are slim. At the time of the Liberation ranks of the officers corps were thoroughly and efficiently purged of a high percentage of officers who had remained loyal to Hitler.

Their pains were filled with young captured soldiers leaders many of whom were as inexperienced as they were patriotic. Promotions in the Air Force were made more often on a basis of military ability than leadership.

The result is that France has one of the world's youngest and most under-trained air forces. This cuts down both the rate of retirement and of promotion.

An attempt to remedy this by lowering the age of responsibility minimum to 18 has made things worse. A candidate must look forward not only to slow promotion, but even to the possibility of higher rank he knows he will be forced to retire too early to live on his pension and too late to start a new career.



For Rapid, Accurate Control at Low Weight/Horsepower Ratio and extremely Low Inertia

The Navy's Lockheed P2V's

USE VICKERS HYDRAULIC TRANSMISSION

The Emerson Electric Mfg. Co. will furnish for the Navy's long range patrol bomber, Lockheed P2V's, is powered by a Vickers hydraulic transmission. This equipment comprises the power transmission and associated controls of the servo circuit. Accuracy and rapidity of response are fundamental characteristics of this Vickers equipment because of the extremely low inertia of rotating parts. The two separate hydraulic motors for train and elevation of the turret are individually and completely controllable in direction of rotation and speed by the application of a few milligrams of signal current.

Vickers hydraulic equipment is now used in a wide variety of servo circuits. Our engineers will gladly discuss their possibilities and advantages with you.

Vickers hydraulic equipment is now used in a wide variety of servo circuits. Our engineers will gladly discuss their possibilities and advantages with you.

**VICKERS Incorporated**  
DIVISION OF THE SPERRY CORPORATION  
1462 OAKMAN BLVD. • DETROIT 32, MICH.

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921



Vickers Double Pump and Control assembly provides complete and independent control of speed and rotation of two hydraulic motors.



Vickers Hydraulic Motors can be stopped instantly to position without clutches or brakes... can be started and stopped instantly because of very low inertia of moving parts.



## Operation Christmas

This Christmas, the aviation people of Berlin will share a bit of our risks, our joys, and our spirit. Thanks to the Airfile. More than ever, our post-living democracy will have something to the wealthy and oppressed. They will look to the stars

where their risks high morale soaring on. . . and hope will be rewarded in their hearts. Because of the GCA's radio leading system, flight will not fail - a child will not go hungry nor cold. This Christmas, Gilfillan presents us an part in GCA



A Division of Gilfillan, Inc.

\*2270 178 LANDINGS ON GCA, TEMPELHOF, OCTOBER, 1948

## SALES & SERVICE



Typical of company-owned places in the Goodrich Branch.

## Spokesman for the Business Plane

To aid its 30 member companies, Corporate Aircraft Owners Assn. watches legislation, swaps information.

Business planes are playing an increasingly important role in the operations of many companies whose production range anywhere from oil to business.

Once for the exclusive use of top executives, they are gradually being used in sales and production work.

Greater dependence on these planes has created among the companies that own them a demand for a larger voice in the legislation that affects them. No second is improved airport services and more suitable places.

One organization, set up to tackle these problems, is the Corporate Aircraft Owners Assn., Inc., 444 Madison Ave., New York City.

Founded in 1946, CAAO now has a membership of 30 plane-owning corporations—many of which are directly concerned with the aviation business. The group owns a total of around 100 planes, used for company purposes.

Recent East Angled-Park team was held Aug. 11, in Washington. Although there were less than 70 members at that time, more than 100 plane-owning corporations attended.

Founders of CAAO represent most of the nation's largest companies—Boeing Steel Corp., Sinclair Refining Co., B. F. Goodrich Co., United Motors Co., Acme Steel Rolling Mill Co., Hovis Brothers Co., and Champion Paper & Fiber Co.

Membership is setting up the organization was W. M. Becken, attorney for Republic Steel Corp., and CAAO executives. Its name is explained by Becken.

He pointed against "discriminatory" legislation, regulations and decisions emanating from federal, state or local agencies, to that extent of plane owning, corporations will not be adversely affected.

It is possible a medium of exchange of information through a carefully handled, surveys, meetings and other activities that will bring members in closer contact.

To enable corporation aircraft owners to be represented as a united force in all matters where organized action is desirable and necessary.

To bring about improvements in aircraft, equipment and services through joint, cooperative action among corporations, which will result in constructive suggestions to manufacturers, distributors and service agencies.

To further the cause of safety and economy in the operation of aircraft by the accumulation and distribution of

Technical Committee—An important CAAO service is the technical committee composed of three veteran pilots and headed by Walter C. Fayer, pilot for Acme Steel Co. The tech committee

works on problems of converting road routes into the types of planes wanted by airlines.

In this capacity, they will be able to advise airplane manufacturers on plane-owning companies' requirements. The result is that manufacturers will learn more fully than they have in the past how to fit the needs of these people.

The committee also evaluates extra-cost aids and navigational equipment. In addition, it guides prospective buyers in selection of airplanes through a doesn't recommend any special name features.

Most planes owned by CAAO members are Beech and Cessna.

Another service is the pilot pool, from which the members may obtain pilots as various pilots looking for positions.

CAAO also helps CAA by serving as a point of contact for information from plane-owning corporations.

► **Passenger Services**—Until now CAAO has been more in line locally organized and its real effort has been made to bring in new members. To improve this situation, it recently appointed a national secretary. His major task will be to coordinate activities and install a full-scale membership drive.

Secretary is C. B. Colby, former editor of Air World and a pilot.

Colby points out that "over 1000 corporations are eligible for membership in CAAO." He emphasizes that "we are aimed primarily at helping the small businessman who owns airplanes. We don't want to keep this so exclusive list."

Colby feels that members' planes would not better service if market by a CAAO lawyer. Airport personnel knowing they were on business, would be more likely to give them priority over pleasure craft.

► **1950: Corporate Planes**—He estimates that there are 1000 single and multi-engine corporations owned at present—2000 of them multi-engine. Another American OMI also owns 10, but a C-54.

Colby indicated that aircraft manufacturers should at this time make some thinking back world business planes. He feels that potentialities of this field have never been fully explored.

Plane owner corporations "are not looking for a whole job and will pay the price if it's worth it."

Membership in CAAO falls into three classifications: full members—plane owners or corporations not presently associated with aviation; associate members—corporations in air transport or aviation industries; honorary members—non-extended to persons who have made a noteworthy contribution to aviation.

Only full members have voting power. Membership fee, including fee for associate members, is \$100 annually.



## PRELUDE TO SURVIVAL

Forty-five years ago at Elly Field . . . Douglas Wright scored a hole . . . to make mankind's oldest dream of heavier-than-air flight . . . an accomplished fact. ☐ Douglas is completely right that this scientific achievement provided an era of expanding friendship among the peoples of the earth . . . time has shown that friendship is only the engine can be a frightful instrument of aggression. ☐ Only three years after World War I . . . and just a year after the Air Force has commemorated its first anniversary of such acts as aggression . . . there is a beautiful tradition that men possess of a dominant American air power is a vital factor in safeguarding against attack. Especially join with the USAF in commemorating our nation's resources to this end.

Republic built the P-47 Thunderbolt, and in all times by the Air Force of the Allied Nations in World War II . . . it is still built by our Air Force and our Marine and Guard and we are now commencing full production in the 480 MPH P-47 Thunderbolt.

☐ Several hundred of these are in daily service with USAF groups throughout the country, meanwhile, development continues a faster, longer range aircraft destined to probe new areas of performance. Republic Aviation Corp., Farmingdale, L. I., N. Y.

"This is the gear of the Thunderbolt"

REPUBLIC AVIATION

Makers of the Mighty Thunderbolt • Thunderbolt • KR-12

# TRANSPORT

## Domestic Freight Traffic

(Ton Miles)

Carrier	First Nine Months 1946	Full Year 1947
Steele	19,941,608	21,837,000
American	14,593,000	14,539,000
Chesnut	14,863,000	16,894,000
Flying Tiger	9,886,000	10,919,000
TWA	6,753,000	4,920,000
Cal Eastern	4,415,000	11,156,000
Wells	1,346,000	3,324,000
U. S. A.	145,000	1,532,000
<b>Total</b>	<b>76,882,608</b>	<b>71,219,000</b>

\* California Eastern suspended freight operations in May, 1945

\*\* U. S. suspended freight operations in May, 1945

## Another Record for U. S. Freight

Survey indicates heavy increase over 1947 ton mile level; scheduled carriers account for most of gain.

By Charles Adams

U. S. freight traffic is competing toward another postwar record this year, but the independent operators who set the industry pace in 1946 and 1947 are continuing to lose ground to their scheduled rivals.

An American Ways survey indicates that freight handled by all domestic air carriers in 1946 was at least 25 per cent above the 168,900,000 ton mile level of 1947. The 16 consolidated domestic trunklines will account for nearly all the industry wide gain, with the independent carriers being their heaviest contributors.

☐ Traffic Slacks—Eight carriers-five scheduled and three unscheduled—last May 77,738,000 freight ton miles all but year (over 70 per cent of the industry total) accounted for 76,882,608 ton miles during the first nine months of 1946. But the five independents, which flew more than 52 per cent of the aggregate 1947 volume, handled less than half of the traffic in the first three quarters of 1948.

The unscheduled carriers—Stark Air Corp., the Flying Tiger Line, California Eastern Airways, Wells Air Service and U. S. Airlines—are the five independents that have been recommended for certification by Civil Aeronautics Board members.

☐ Production Too Optimistic—In estimates furnished the CAB only this year, both certificated and unscheduled

groups in the freight industry predicted they would market their traffic more than 100 percent during 1948. But of the eight major carriers studied, only the Flying Tiger Line now seems likely to double its 1947 volume.

Stark Airways, largest domestic freight carrier in 1946 and 1947, almost certainly will take top honors again this year. The San Antonio company flew 11,169,000 ton miles in 1946, 21,915,000 ton miles in 1947 and 29,945,000 ton miles in the first nine months of 1948.

☐ Challenge to Stark—American Airlines is cutting sharply into Stark's lead, and in September and October of this year became the first carrier to move freight tonnage the independent over a sustained period. American accounted for 2,211,000 freight ton miles in September and last month, a new company record compared to 2,474,000 in October. Stark flew 2,175,000 ton miles in September and 2,111,000 in October, well below its all-time peak of 3,690,000 ton miles set last May.

Right S. Dorman, A. A. president, said last month that his company's freight volume will continue to grow despite intense competition.

"We were forced to build our freight operations plant somewhat in advance of our DC-4 deliveries permitted us to release DC-4s from passenger service and fit them for cargo," Dorman stated. "But now we have the airplanes to back up our operations we can give the best

freight service in the world." American, which currently operates 14 DC-4 Air Liners, in addition to consolidation passenger cargo ships, last month marked its fourth anniversary of cargo service.

Dorman said that in spite of American's lower freight volume during the past two years of low commodity activity a higher rate of revenue return than its unscheduled competitors. "In 1947," he continued, "American realized \$1 million in freight revenues compared with \$3.7 million for the largest unscheduled carrier even though their volume substantially exceeded ours."

"This is not to say that our aggregate freight revenues indicate a comparable margin of profit over our competitors. Our favorable rate of return is due to the fact that we provide freight service on a common carrier basis to all the other carriers, rather than just to the industrial sector. They involve the handling of more small shipments on which rates and expenses are relatively higher, especially for short distances."

☐ Profit for Stark—Early this month, Stark reported that it expects to show an overall profit for 1948 and plans to expand its operations quickly. It is to receive a certificate from CAB. Lewis J. Moorman, Jr., Stark's executive vice president and chairman of the company's air freight operations together with another flightman took on C-46s for the Air Force, produced a company profit of \$51,000 in the third quarter of this year.

He added that if the CAB certificate is forthcoming, Stark expects to spend \$15 million additional capital. This money Moorman declared could be obtained provided CAB continues its efforts to eliminate unfair route ratings and rate practices in the freight industry.

☐ Modifications Work—Stark's supply and service division, which is handling C-46 modifications for the Air Force and other customers, help provide the company with extra revenues, according to Moorman. "This need arose because of unfair competitive conditions faced on the industry by the unbalanced passenger airlines, which consequently are unable to carry out their scheduled routes, which on the lowest in the field. We have reluctantly lowered our rates below costs in some instances to meet those of other airlines, although we know they are unbalanced and are being raised for us and others."

During the third quarter of 1948, Stark reported \$351,200 operating revenue from transportation (equal to 14.6 cents a ton mile), plus \$35,925 from package and delivery, \$69,941 from other sources and \$150,132 from the supply and service division. Without the supply and service division's income Stark would have shown a sizeable deficit.



Are You seeking a better look . . . a look with greater compactness and lighter weight — for a new product design? Product engineers recognize the advantages of custom engineered look design by Adams-Rite. For nearly a half century Adams-Rite has been in serving industry. What could be more worthy testimony of the value of this service than the knowledge that every part of today's larger aircraft use Adams-Rite locks and latches. Engineering assistance in your special locking device problems is yours for the asking.



**ADAMS-RITE MANUFACTURING CO.**  
401 WEST OCEAN BLVD. GLENDALE 4, CALIFORNIA, U.S.A.

throughout the first nine months of 1948.  
On the basis of freight revenues alone, Stuck has shown profits in only two months (September and October, 1947) since starting operations in March, 1946. The carrier's annual net profit from the current year was forecast until Sept. 30, 1948, was \$1,361,590.

► **Twenty-Two C-46s on Hand**—Stuck's fleet consists of six C-46s (original cost \$48,540 each) for C-46's (original cost \$24,000 to \$25,000 each) and a C-60A which is not being utilized. In addition, the company is leasing 10 C-66's from the Air Force at \$300 a

month. On Sept. 15, Stuck had 532 employees in its largest operation, loading 66 light planes, plus 130 airplanes in the supply and service division.

Like Stuck, the Flying Tippers, California Eastern and Wells are organizing their freight service with other airlines.

California Eastern filed bankruptcy action last May 12 but has been leasing its C-54s to independent operators since then.

It is believed, which insured freight service last May after making operating for an entire, late \$75,000 in the third quarter, bringing its 1948 debt to \$225,499.

## Traffic Upurge Seen for 1949

**UAL President W. A. Patterson says prospects are good, but improvement in earning picture depends on CAB.**

United Air Lines President W. A. Patterson believes that the transport industry has good prospects for a full year's operation during 1949, but contends that any improvement in the annual earnings picture of 1947-1948 depends entirely on the Civil Aeronautics Board. In a personal interview, Patterson said that even though surface travel was expected to decline, his company con-

pects at least to equal in 1948 the volume of almost 2,800,000 passengers carried in 1948. He said, however, should show some increase as a result of a full year's operation of the joint and service started last September.

► **1948 Traffic Forecast**—During 1948, United flew about 1,285,700,000 enroute passenger miles. This represents a full year's operation of the joint and service started last September. In 1948, United flew about 1,285,700,000 enroute passenger miles. This represents a full year's operation of the joint and service started last September. In 1948, United flew about 1,285,700,000 enroute passenger miles. This represents a full year's operation of the joint and service started last September.

Regulation of the increasingly tight traffic outlook. United believes prices will be set by CAB to correct the network's transportation pattern and to solve other problems facing the industry.

Patterson noted that costs continue to run ahead of line incomes in the air transport industry. Since 1941, United's wage expense has risen 57 percent and materials 50 percent," he declared. "Meanwhile, the company's fleet has been lessened 34 percent, while fuel and engine repair costs both dropped 45 percent. Today, only 7 percent of United's revenue comes from air and against 95 percent in 1929."

In 1948, United flew an estimated 35,342,000 enroute passenger miles, 96 percent of its scheduled mileage for the year-end about 70 percent of all flights was completed on time or within 15 minutes of scheduled time. In 1947, the company completed 62,775,490 enroute passenger miles, or 94 percent of its scheduled mileage, but only 30 percent was completed within 15 minutes of scheduled time.

## WAL Would Do Away With Meals

**Carrier will ask CAB permission to return the savings to its passengers by lowering its fares 5 percent.**

Western Air Lines, which has been serving food aboard its planes for 16 years, intends to discontinue this service on all its flights and meals since after Jan. 1 it has asked permission to pass the savings along to its passengers.

In announcing the move, Virgil C. Dwyer, WAL president, declared the airline would be saving money, food and expense. He said Western would file new tariff schedules with CAB providing for a systematic 5 percent fare reduction in all passenger fares—the rate being saved would be by elimination of direct and indirect costs connected with meal service.

► **Rate War Not Intended**—Dwyer declared that his company was not entering in a rate war by asking the fare reduction. "We are not lowering fares in the sense that the net return to Western from a ticket sale will be reduced. We are merely passing a saving along to the public. Actually, the net yield to Western of a ticket sale will be the same as a little more."

Despite this statement, Western's proposed fare reduction apparently faced strong opposition. United Air Lines, a WAL competitor on West Coast routes, is a strong proponent of meals in flight and has controlled their cost to negligible compared with other expenses included in the price of a ticket.

► **CAB Position**—Last August, in backing a 10 percent fare hike at a meeting of industry executives in Washington, CAB presented a study showing that the domestic airlines might have cut their \$30,500,000 operating loss last year by \$11 million had meal service been eliminated. CAB Chairman Joseph J. O'Connor, Jr., said the Board would have considered an additional fare increase if it had been asked to do so at the Washington meeting. He added that CAB would make further studies and advise the industry later of its conclusions.

Dwyer said that during the first 10 months of 1948 meal service had cost Western \$219,733, or 9.24 percent of gross passenger revenues. These figures were used as the basis for the proposed 5 percent fare reduction.

► **Short Trips Canceled**—Western noted that the average person on its routes pays \$21 for a ticket and takes an average of 130 miles. This would be less than cross-country by W. A. new Coast Lines. About 40 percent of Western's passengers are affected each at present and about 25 percent of these are not flying and where there

"One of the big difficulties is that 54 percent of our passengers who don't have meals served there cannot pay the same price for their ticket as the 46 percent served meals." Dwyer pointed out.

"The same is true of those who ride on road flights but don't eat. Thus about two-thirds of our passengers pay about half the overhead also cut from."

► **Hidden Cost of Meals**—"There is a great deal of hidden cost involved in furnishing meals. We must think in terms of amortizing the cost of food equipment both in the air and on the ground. Such equipment is extremely expensive to buy and maintain, and the cost of extra personnel necessary to provide meal service is proportionately high."

► **What's to Come**—Intended meals since 1935, one of the oldest airlines was lost of profits. But now we have reached the point in an transportation where we must decide whether the more or the less is going to support the costs."

► **Difficult View Expressed**—A def-

## Now! Aircraft Alloy Steel and Aircraft Stainless

**in Ryerson Stock for Quick Shipment**

When sudden design changes call for prompt delivery of aircraft quality alloy or stainless stock, here's the source to call.

Ryerson, largest supplier of steel-from-stock to American industry, now carries specialized requirements of aircraft manufacturers.

Make the long hours of engineering pay off in swift-moving production. Contact your nearby Ryerson plant for quick delivery—pounds or tons.

### AIRCRAFT QUALITY STEEL IN STOCK

**ALLOYS** 4130—Round, flat, square and hexagons to AN QQ 3 488 as specified.  
4030—Sheet and strip to AN QQ 5 483 as specified.  
4140—Round to AN QQ 5 773 as specified.  
Manganese—Alloys to AN 5 15a as specified and ANS 4078.  
**STAINLESS** Sheet and strip—302 to AN QQ 5 773—types 321 & 304 to AN 5 750.  
Sheet and strip—304 to AN-QQ 5 777—types 347 to QQ 5 763c.

**JOSEPH E. RYERSON & SONS, INC.** Steel Service Plants: New York, Boston, Philadelphia, Denver, Cincinnati, Cleveland, Pittsburgh, Toledo, Chicago, Milwaukee, St. Louis, San Francisco, San Francisco.

# RYERSON

cut view of turbine marks is held by other refinery contractors, including UAL President W. A. Patterson, who believes that marks have become part of the carrier's standard armor and a feature expected by the passengers. Patterson said last summer he couldn't understand how anybody can be so sure as to be sure marks are not included in the price of the passenger's ticket. Eastern Air Lines President E. V. Rukenstein and a majority of CAB members think an extra charge should be made for marks in flight.

Travelers apparently believe a 5 percent fare reduction will get more passengers aboard his planes than he needs. Western has had a bad time

cheap, average load factors dropping from 64.5 percent in the first nine months of 1947 to 56.9 percent in the same period this year, and 1948 loads have been heavy.

### Nonskids Will Carry Bulk of Immigrants

Commercial airline—especially non-scheduled operators—are doing a sound amount of business with the government's Immigration and Naturalization Service.

Current estimates are that the Justice Department expects will spend over \$2.9 million for air transportation of aliens

this fiscal year—a 10 percent increase over fiscal 1948. The Immigration Service began and will continue to carry deportees to border points on parts of service contracting in 1949.

► **Expatriate Call-In**—some cases, the alien has been taken directly to their homeland by plane. The Immigration Service has found that no transportation costs deter deportee detention expenses materially.

While the certified carriers have been utilized by the Immigration Service, both of the work is handled by unscheduled and contract operators because of the lower rates offered. Most flights carry Latin American aliens from large cities such as New Francisco, Seattle, Detroit, Chicago and New York to Miami, El Paso and San Antonio, with perhaps at intermediate points. There is a small transcontinental movement both east and west.

New unscheduled companies will handle most of the deportee traffic between now and June 30—the end of the fiscal year—on the basis of bids opened by the Immigration Service last month (November 1947, Nov. 17). The current air carriers: Transair, Inc., Houston, New York; Airline Transport Carriers, Inc., Portland, Ore.; American Corp. of Seattle, Seattle; Lewis Air Lines, Dallas, Tex.; Miami Airlines, Miami; St. Louis Air Charter, St. Louis; Southwest Airlines, Long Beach, Calif.; Viking Airlines, Portland, and Yakima Sky Car, Yakima, Wash.

### Engine Changes Give Tudor IV New Weight

British South American Airways' four-engine Tudor IV aircraft have been re-engineered at a new maximum weight of 32,300 lb—an increase of 2000 lb over the previous maximum weight.

This has been made possible by Rolls-Royce Merlin engines which produce more power for both take-off and climb. As a result, maximum payload for most routes Atlantic crossings under average conditions has been increased to 9,000 lb. The Tudor IV will now be able to carry 24 full load of 12 passengers on all sections of BSA's routes, in addition to carrying an increased volume of freight.

BSAA is using Tudor IVs to operate its transatlantic routes from Havana, Cuba, down the west coast of South America to Santiago, Chile, and Buenos Aires. In the past Tudor has been used only on the trans Atlantic route from London to Bermuda and Kingston, Jamaica. Tudor IVs will replace Yorks on BSA's route to Brazil and Argentina in February.

### AA Family Plan Sparks October Gain

Part of the week lately but documents are going against traffic charts a pleasing "new look," and may be a significant factor in brightening up the industry's earnings statements covering this fall and winter.

American Airlines, which last Sept. 17 introduced the new transportation begun on Mondays, Tuesdays and Wednesdays, has completed a study showing results during October—the first full month of the plan's operation. The survey disclosed that normal traffic peaks, making weekend traffic slow, and last of the week, traffic data had been leveled out almost entirely.

► **Traffic Trend Reversed**—In fact, AA's passenger business on Mondays, Tuesdays and Wednesdays throughout October was slightly better than on Fridays, Saturdays and Sundays. During October, under the family plan, Airlines handled 6036 customers at full fare and 7017 at half fare. The family fare half price is a full-paying adult is to be accompanied by half fare members of his or her immediate family on air trips made during the weekly-peak first three days of each week.

AA has 14,440,963 percent passenger miles under the family fare plan in October, of which 7,945,345 were at half fare and 7,001,418 at full fare. This 14,440,963 passenger mile total represented over 10 percent of American's domestic passenger business in the month.

► **Dollar Sales Surge**—October revenue from the family plan was \$612,757 and averaged 4.55 cents per passenger mile. Half fare tickets (75.5 cents a mile) brought in \$121,731, and full fare tickets \$413,024 (\$19 cents a mile). Actually, American's net miles under the family fare total 5746,174 in October, but the figure includes the value of tickets which could be used for advance sale in subsequent months.

In August, before institution of the family fare, American's load factor dropped below 50 percent on three Tuesdays and one Wednesday over a four week period. In October over a comparable period, the carrier's load factor never went under 62.5 percent during the first three days of any week.

► **Thursday New Low Peak**—Highest daily load factor reported by AA in the October period was on a Wednesday. In August, peak loads normally occurred over weekends, and the lowest day traffic was on Thursdays. During October, the low traffic point was on Thursday in each of the four weeks studied.

American showed an overall decrease load factor of 56.5 percent in October,

UP-TO-DATE AIRPORTS  
FROM COAST TO COAST ARE INSTALLING

# Bendix-Friez\* Aerovane\*

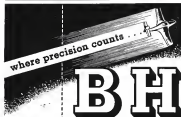
THE MODERN INSTRUMENT  
FOR WIND SPEED  
AND DIRECTION!



The precision with which the Aerovane transmits results to over-coming wind resistance is due to the same features of aerodynamic design that give modern aircraft their sensitive stability in flight. In addition, years of accurate handling and experience are assured. Give your airport the benefit of the latest engineering advances in wind-measuring instruments—install the Bendix-Friez Aerovane.



FREE INSTRUMENT DIVISION  
OF BENDIX AVIONIC CORPORATION  
Baltimore & Maryland



- Gas Turbine Compressors
- Brake Pumps
- Propeller Cuffs
- Cowlings
- Collector Rings
- Engine Mounts
- Aluminum Tanks
- Heat Metal Fabrication
- Sheet Metal Stamping

LET US KNOW YOUR REQUIREMENTS

Suppliers to manufacturers only



Precision made by B H

New View R-3000 Engines



## MADE FOR EVERY INDUSTRIAL USE



DARNELL CASTERS & E-Z ROLL WHEELS

**For Savings, Service  
Safety and Speed—  
Demand Darnell  
Dependability. A  
caster or wheel for  
every industrial use**

DARNELL CORP. LTD. 60 WALKER ST. NEW YORK 13, N.Y.  
LONG BEACH 4, CALIFORNIA 36 N. CLINTON CHICAGO 6, ILL.

cooperated with 50 5 in August. By contrast, United, the second highest, will estimate a heavily low plan until November, reported its domestic load factor declined from 82.4 percent in August to 64.9 percent in October.

► **Long October Prediction**—How much of America's substantial October profit (reportedly well above the same month of 1947) can be attributed to traffic generated by the trade fair and the subject of numerous company and C.A.A. study. But AA executives state without qualification that they are well satisfied with the plan's revenue-producing results.

Average family group taking advantage of America's first of November, will earn a profit of about 2.3 percent. Forty percent of the full-time passengers are first riders, as are three out of every ten full-time customers using the trade plan.

► **Taxicab Extended**—Under its original term, America's family fare would have expired Dec. 31. The carrier is currently asked CAA to extend the plan until Mar. 31. Other "family fare" carriers are asking the same extension.

### Airline Group Sues N. Y. Port Authority

The group, including both Eastern and the Port of New York Authority, came to a head last week in an equity suit filed in New York Superior Court.

Eight airlines charged that the Port Authority had "reimburse, deplete and without participation repudiated bonded and insured" the airlines' losses at the following:

They demanded the Authority for refund, arbitrary control of the airline and asked the court to determine whether in a business organization it is legally and morally bound to honor contracts recognized as valid and binding.

Suit is for payment charging the Authority to honor losses which the airlines contracted with the City of New York in 1945. The airlines say the Authority, before taking over the field, agreed to reimburse the losses.

► **Insurance from Suit**—In raising the Port Authority, "a body corporate and politic," as a defendant, the airlines do not attack the organization's claim to insurance from suit. They also named as defendants two executives and the Authority's trustee governing commission. The executives are Austin J. Tobes, executive director, and James C. Buckley, director of airport development.

Denial of the suit, reportedly due to get the airlines into the field under terms of their earlier contracts will have far-reaching effects. Success of the airline's action would be a double

blow to the Port Authority, partly because it would be precluded from using its own rate system but mainly because its status of immunity from suit would no longer stand.

► **Colonial Not Included**—If the Authority can be used over the field, its other air operations will be vulnerable to similar actions. The Authority declared official consent, immediately after the suit was filed, although a spokesman expressed belief it could not legally be sued.

Colonial Airlines, after participating with the other carriers in protesting against the Authority, is not one of the plaintiffs in the current action. Colonial doesn't want to make the move from LaGuardia Field because of cross traffic difficulties and higher costs. But it supports the others in their lawsuit differences with the port agency.

## SHORTLINES

► **Alaska Airlines-CAR** has approved the carrier's application for a \$152,000 loan from the Reconstruction Finance Corp.

► **Americana** is promoting winter travel with an extensive holiday parking to its safety and dependability record between November and February during the past five years. The carrier is aimed at people "who would in some ways at travel by air during winter" and states that "actually, winter has nothing to do with safety."

► **BOAC**—Sir Miles Thomas, deputy chairman, stated he was well satisfied with the organization's winter dream expansion in North America following a recent inspection tour.

► **Delta** is turning 16 men with capital guidelines to take over flight operations duties on its five new DC-6s.

► **National**—The carrier's fleet to the coast line as those of competing carriers (Eastern and Delta). Prior to retirement at the jet air line, NAL president, G. T. Baker said he would not let his line from 10 percent despite CAA's recommendations last August. The new higher fares provide for a 5 percent discount on roundtrips.

A CAA examiner has recommended approval of a Capital Airlines-NAL equipment interchange for service between Capital's point east of Pittsburgh and north of Washington and points on National's Route 31 south of Washington. He said the interchange operation in capital cities west of Pittsburgh would not be in the public interest.

► **Norfolk**—L. L. Shantz has been named assistant director of sales

## Rusco Seat Belts Put Safety First...



Consider these 6 outstanding features of Top-1-Lok Seat Belts

1. **Instant, positive action**... to lock or unlock simply throw lever.
2. **Dependability**... Positive Triple Grip—Meets F.A.A. Tests.
3. **Smoothly**... Automatic adjustment and release.
4. **Lightness**... 10" belt assembly weighs less than a pound.
5. **Adjustment**... No buckles, nothing to pull off, nothing to free.
6. **Shock resistance**... No mechanical springs.

This Rusco Belt is considered "Standard" for light planes. Other Rusco belts for every requirement. See your nearest supply house or our nearest office.



THE RUSCO MANUFACTURING CO., Inc. Division of  
New York • Chicago • Boston • San Francisco

ATLANTIC SERVES

WILMINGTON DEL.

New York City  
New York City

NEW YORK N.Y.

Baltimore  
Baltimore

BALTIMORE MD.

Boston  
Boston

BOSTON MASS.

Atlantic  
Atlantic

Next Time—Stop at Atlantic

It won't let go!



It's **Airloc**

the proven fastener  
of many uses

CHUCK THESE FEATURES:

- Perfect in any spot requiring combination of tight closure and removable joint.
- Ideal for coving, fitting, access doors, inspection plates, loading gear covers, etc.
- Keys locked under extreme pressure, yet easily released with screwdriver, key or coin.
- Spring action compresses for variations in material thickness.
- Valuable safety feature—when it's unlocked, you can see it—and protrusion is visible.
- Simple, three-piece construction—reciprocate, install and go.
- Three sizes with a complete range of steel types to meet almost every need.

Monadnock also manufactures SNAP-IT-TRIM and TABS LDC fabric and insulation removers. Adams Bros. WEDGITS... has a wealth of experience in the mounting field. We welcome inquiries from manufacturers seeking reliable development and production facilities.



subsidiary of UNITED CARBIDE FASTENER CORP.











## *magic carpet to far places*

Meet the powerful Baeing Stratacruiser with the strength of 14,000 horses in its mighty engines that roar it on to London, Istanbul, Delhi and other far places halfway around the world.

It's a giant in size—a giant in performance—prata-type of the famous Baeing B-50 that adds sinews to America's air arm.

In the Pratt and Whitney Wasp Major engines that power these air titans are Foote Bras. Gears, sa light and af such accuracy that they closely approach labaratory perfection.

On the landing gear and in the wings are Foate Bras. Actuators—modern miracles af engineering development.

Praducers af this country's mighty aircraft know that when problems af high speed, light weight, compactness and extreme efficiency are faced in gear and actuator design, Foate Bras. engineering and Foate Bros. manufacturing facilities offer the successful salutation.

Manufacturers in all industries know Foate Bras. is the logical saurce for commercial gears and enclased gear drives—either warm ar helical—in a wide range af sizes and ratias.

# FOOTE BROS.

*Better Power Transmission Through Better Gears*

FOOTE BROS. GEAR AND MACHINE CORPORATION

Dept. AYW, 4545 South Western Boulevard  
Chicago 9, Illinois

